

# Dr. T's Presents...

File Edit Library Get/Send Options Info

Performance				LIBRARY	
--	Roland D-11B	Patch	1	Patch	"Big Ben" 12/ 6/89 16:24 obnox
2	Roland D-11B	PartTone	11	Timbass	Accordion 5/28/89 12:25 preset
3	Roland D-11B	PartTone	21	Syn Mal	Accordion 5/29/89 15:34 random
4	Roland D-11B	PartTone	31	BassDru	
5	Roland D-11B	PartTone	41	BassDru	
6	Roland D-11B	PartTone	51	Bubbly	
7	Roland D-11B	PartTone	61	Timbass	
8	Roland D-11B	PartTone	71	ElecOrg	
9	Roland D-11B	PartTone	81	Good Ki	

Patch: Bubblysynth\*

env envelope

depth velo

depth hys

cut hf

7/B

time hf

1

bias level

bias p1

<B1

## X-oR

### Universal System Exclusive Orchestrator

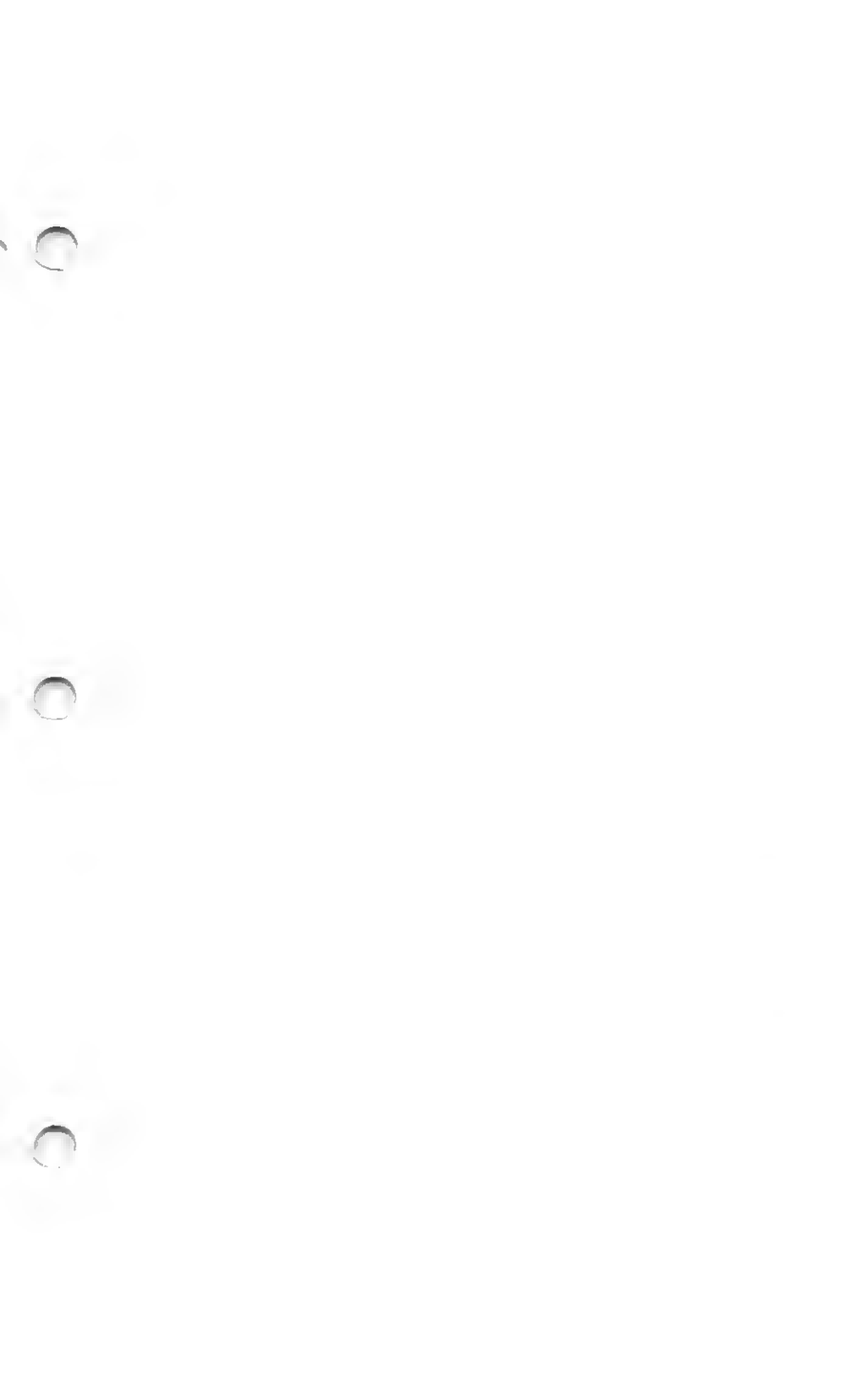
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## **A Note from the Caged Artist**

Welcome to X-oR, my first-born male child (or that's how it feels, anyway). X-oR is the first of a totally new breed of editor/librarian. In my mind, however, it's been a long gestation period—six years, to be exact. Since the earliest Caged Artist programs, DX-Heaven and CZ-Rider, I've known that it should be possible to create a universal editor. However, it took twenty more individual ed/libs before I felt I had the requisite knowledge and experience to tackle the problem. As X-oR grew, it started to take on a life of its own, as children will often do. It became much more powerful than I had imagined. I guess I'm just talking like a proud father—I'll shut up now, and let X-oR speak for itself.

X-oR combines powerful patch creation and editing with librarian and database functions for almost any MIDI device. It's not just an editor/librarian; it's all the editor/librarian programs you need, operating harmoniously in an integrated environment customized to your MIDI setup. (In case you're wondering, X-oR is shorthand for Exclusive--as In System Exclusive--Orchestrator. I see it as an orchestration program—but not in the traditional sense.)

X-oR presents an entirely new way of viewing your MIDI instruments. Under X-oR's control, your assortment of MIDI gear from various manufacturers resembles a single multi-faceted instrument. The unified user interface puts you in touch with ALL the power of your system, from the most subtle parameter on up to the overall configuration. For those of you who have never ventured beyond a preset, X-oR may be your ticket to new adventures in sound. For the weary adventurer, it's a ticket back to the more creative and musical aspects of life.

Experience tells us that creating a good patch editor is probably never going to be easy, no matter how many tools you have at your disposal. Every instrument has its own quirks, if not outright bugs--usually just enough to drive the average MIDI programmer up the wall. This is why one of our goals is to provide support for as many instruments as possible. We feel that you, our customers, should be able to spend most of your time and effort on MUSIC--and leave the "tooling" to us!

On the other hand, your package does include the necessary tools to make X-oR work with any MIDI device, and if you're prepared for a real left-brain workout, we don't want to discourage you. The Profile development system may not be simple, but it is fast, powerful, and flexible enough to get around the gnarliest problems. Actually, to tell the truth, we kind of enjoy this stuff!

We feel--and we hope you agree--that X-oR is a big step in the right conceptual direction. Once you've got it set up and working with your system (the hard part), you may soon find it indispensable--so dig in and ENJOY!

- Bob Melvin (Chief Executive X-oRcist)

## Chapter 1

### Getting Started with X-oR

**This chapter** provides an introduction to X-oR, explaining the basic concepts, and defining the terminology we use throughout both the program and the manual. (A "must read"!)

**Chapter 2** provides complete step-by-step instructions for setting X-oR up for your system.

**Chapter 3** gives a brief overview of X-oR's menus. The **File** and **Info** menus are described in some detail.

**Chapter 4** delves into the techniques used to monitor sounds in X-oR.

**Chapters 5 to 8** deal with X-oR's four main windows: Performance, Bank, Library and Patch. Each window corresponds to a certain type of data file. These chapters include descriptions of all the commands and techniques used to manipulate MIDI data.

**Chapter 9** explains each of X-oR's global parameters, including those in the **Options** menu and the **System Parameters** window.

**Chapter 10** is a reference for using the Setup Editor (as opposed to the step-by-step procedure of Chapter 2), describing the various **Instrument Setup** parameters, most of which are also available in X-oR.

**Chapter 11** is basically for MPE (Dr. T's Multi Program Environment) users.

We suggest that you keep all your Instrument manuals handy while you learn the program.

If any changes were made to X-oR since this manual was released, they are listed in a file named **READ.ME** on your program disk.

## Registration

Before you do *anything* else, fill out and mail the warranty registration card that came with X-oR. As soon as we get it, we'll send you a free backup disk.

## How X-oR Works (In a Nutshell)

X-oR deals primarily with MIDI *system exclusive* data. This is a particular type of MIDI data which handles Information that is specific to a single Instrument, or family of Instruments. Because every manufacturer handles system exclusive Information in a different way (and may even handle it differently in different Instruments), all editor/librarian programs have previously been limited to working with a single type of Instrument. However, after many years of working with different manufacturer's MIDI Implementations, we have developed methods that can be applied to just about any Instrument. The result is X-oR.

To work with an instrument, X-oR needs to know the instrument's technical details, such as communication protocols, patch formats, parameter ranges, etc. This is accomplished through the use of *Profiles*, which are special data files that contain all the necessary Information. (Some people may prefer the term "Driver" or "Template".) We've provided a large number of Profiles for existing Instruments on the PROFILES disk, and even more on Dr. T's affiliated BBS.

Most users of X-oR won't want to deal with creating a Profile, so we've left this considerable task to another program (the X-oR Profile Development System, otherwise known as E-oR). This separate program has many special tools for deciphering and debugging weird MIDI Implementations, as well as the extra screens for editing the Profile. This two-program arrangement also allows X-oR to be both simpler and smaller, which is better when you run it with a sequencer in Dr. T's MPE or any similar multi-tasking environment.

Profiles can be exchanged between all of the computers that X-oR runs on (ST, Amiga, Macintosh, and PC). Building a Profile is a lot faster than creating a dedicated editor/librarian program (for us, it's about 20 times faster). Therefore, with some help from the more technical-minded X-oR users, every MIDI Instrument that handles system exclusive data will hopefully soon have a Profile.

## **Machines, Instruments, and Modules**

Throughout this manual, we will use the term *Machine* to refer to a single MIDI device (such as a Matrix 1000, a DX-7 or a Prophet 5). Most Machines only require a single X-oR Profile, but for reasons of programming necessity or convenience, Machines may be broken down into two or more Profiles. For example, a complex Machine such as the Yamaha TX81Z might have one Profile for sounds, and a separate Profile for microtuning tables.

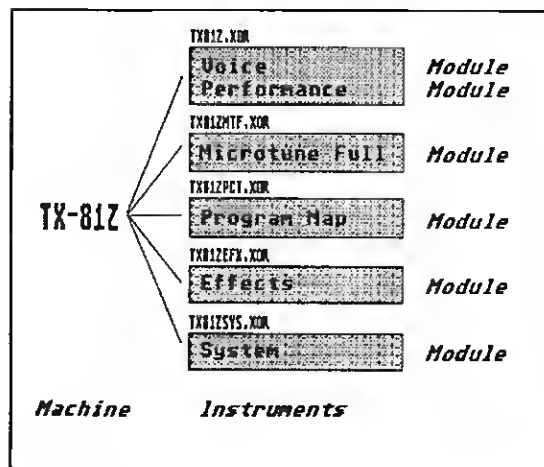
Instead of dealing with Machines per se, X-oR works with what we call *Instruments*. Each Instrument uses only one Profile, which usually represents an entire Machine. The exception is when the Machine uses multiple Profiles (as in the above example), in which case several Instruments are required to completely control one Machine.

There is no restriction on how many Instruments may use the same Profile, so if you have 16 DX-7's, they are treated as 16 separate Instruments. X-oR currently handles up to 128 Instruments at a time, which is enough for most studios, don't you think?

In complex Machines (practically any modern synth), a Profile is divided into *Data Types*, each of which is nearly a complete Profile in itself. Each Data Type corresponds to a particular data format in the Machine, for example, Single patches vs. Multi patches. The Profile structure ties the Data Types together, and allows for inter-Data Type communication, one secret to X-oR's sophistication. The Profile specifies how many *Patch Edit Buffers* of each Data Type it will control, usually duplicating the Patch Edit Buffers within the actual Machine. For example, an MT-32 or D-110 Profile has a "Part Tone" Data Type, with eight Patch Edit Buffers assigned to it.

To make things easier to describe, we'll use the term *Module* to refer to a single Patch Edit Buffer. A Module isn't the data in the Edit Buffer (that's called a *Patch*), but the modular part of the Instrument that uses the data. Some Instruments will only have a single Module, while others may have many. For example, the D-110 has eight separately addressable timbres (the "Part Tone" Data Type), a multi-timbral setup, drum setup, and program change table--11 Modules in all! All of these Modules are part of one Instrument, and all are controlled by one Profile.

The following diagram shows how X-oR divides a Machine into several Instruments and Modules, using multiple Profiles.



TX-81Z Instruments and Modules

## Patches and Banks

X-oR uses several types of data structures, or files. The basic file is a *Patch*, which is the generic term for a single sound, voice, program, preset, tuning table, drumset, or whatever you call a certain specific bunch of parameters. In X-oR terms, a Patch is the data for one Module. For instance, in the TX-81Z, "Patch" refers to either a Voice, or to a Performance, or to a group of System parameters, since each of these is treated as a separate Module. You should take note that some companies use the term "patch" to refer to a particular kind of Patch.

*Bank* files are a collection of all the stored (i.e. "dormant" or "non-running") Patches in a given Machine. The format of X-oR Bank files depends on the design of the Machine (and also on the whim of the Profile author), and may contain Patches for any number of a Machine's Data Types. (Because of the way X-oR handles Bank windows, however, this is all pretty transparent.) Note that some manufacturers use the term "bank" to refer to a sub-grouping of patches in memory. When we say Bank, we mean ALL the patches, not a sub-grouping.

A Profile may not provide Bank storage capabilities for all its Data Types. This is because the Bank file format generally reflects the architecture of the Machine. If a machine has no Bank storage for a certain type of Patch, X-oR usually doesn't either. In such cases, all the Bank commands in the menus will be inactive. On the other hand, it's also possible for the Profile author to "invent" a Bank format when no such format exists in the Machine, which may actually improve upon the design of a Machine.

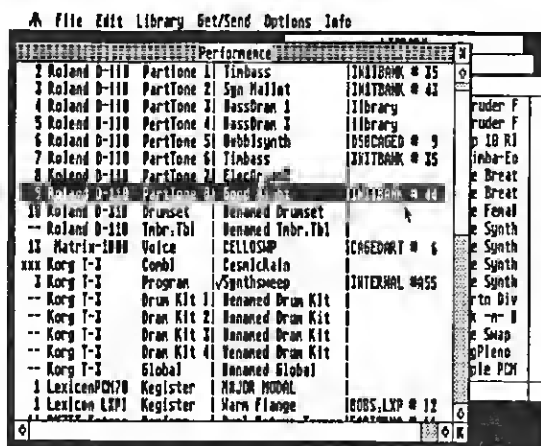
All Patch and Bank files may be individually sent or received via MIDI (if possible), and saved to disk.



## Performances

**A Performance** is a sort of "SuperPatch" file, that contains the current Patch data for each Module in your system, as well as the name of the current Bank file for every Instrument. The best way to think of a Performance is as a "snapshot" of your entire MIDI system. Loading a Performance file can restore every possible bit of data in your MIDI setup to the way it was when the Performance was stored. Even if your MIDI setup has changed, X-oR will load the Performance correctly. For example, a Performance created in your home studio can be loaded into any studio with X-oR—if they have compatible Machines in their setup, you're all set!

Keep in mind that the Performance file itself contains only the Patch data (as shown in the **Performance** window), and merely "points" to the correct Bank files (otherwise, it would use a large amount of disk space).



### X-oR Performance Window

## Libraries

X-oR also goes one step further than most editor/librarians, and provides a separate *Library* for each kind of Patch (each Data Type), which holds an unlimited number of Patches, and which also allows you to cross reference Patches by name, date, or any of several qualities, or *keywords*. This frees you from the need to remember which Bank contains that killer stringamawhap sound you programmed last month--an activity which always slows down the creative process.

The Library is also a great place to store Patches as you're editing them. With a couple of clicks of the mouse, your edited sound is permanently saved to disk, and when you're done you'll find that you have a record of the session in chronological order.

Libraries can only store Patches from a single Data Type. However, Libraries can be created for all kinds of Patches, not just those that exist in Bank format, which is why it's usually no big deal if a certain type of Patch isn't available in Bank format. Also, Libraries may be shared by different patch-compatible Instruments, even though the Bank file formats may be different.

## Menus and Windows

X-oR uses the familiar GEM system of windows and drop down menus for its user interface. The Atari manual covers all aspects of the windows (opening, closing, moving, sizing, etc.) as well as menus. If you're not familiar with GEM, check it out!

One window, the **Performance** window, is always open, to reinforce its importance as X-oR's control center. Most of the other windows on the screen depend on the Module that is selected in the **Performance** window. Other windows, such as the **Patch Edit** window may be opened from the menus. Each Bank also has its own window, which may be opened with the **Open Bank...** item in the File menu.

Many menu items can also be selected with <Control> key combinations. In such cases, a letter will appear to the left of that item in the menu. Pressing that key while holding the <Control> key is a quick way to select the menu item, without using the mouse. (Control keys won't work while any menu is displayed.)

## **Data Entry Conventions**

Most of X-oR's data entry methods should be familiar, if you've worked with other GEM programs. An object may be selected by clicking on it with the left mouse button. When an object is selected, it is usually highlighted (light letters on a dark background with the default configuration). In many cases, clicking on a highlighted object has a special meaning. Some objects may be "dragged" by holding down the button and moving the mouse.

We also use various "menu switches." These are special menu commands that directly affect X-oR global parameters. A check mark next to a menu item shows that the item is "on".

It's important that you know how to operate a standard GEM file selector. This isn't covered in the ST manual, but it is fairly intuitive. If it gives you trouble, there are several good books on the market.

Text areas in dialog boxes are edited using the <Insert>, <Delete>, and <Backspace> keys in a manner similar to the "Replace" mode in most word processors, and the <Esc> key will clear the text. The cursor control keys and mouse can also be used to move the cursor within a text field.

## Hard Disks

X-oR allows you to take full advantage of a hard disk, both for data storage and program execution. X-oR's setup program allows you to specify a separate folder for each Instrument in your system, as an aid in organizing your sounds (if you don't know what a folder is, you should read the Atari ST manual before proceeding). X-oR may also be executed directly from a hard disk, though you'll need to insert your original program disk (the "key disk") in drive A when you first boot the program. You can remove the key disk as soon as X-oR is up and running.

## Desk Accessories and Multi-tasking Environments

Thanks to its GEM interface, X-oR provides full support of most desk accessories. The reason we say "most" rather than "all" is that there are some DAs out there that use rather, ah, "creative" programming techniques, that may conflict with X-oR's operation. We suggest that you thoroughly test any desk accessories that you intend to use with X-oR before you dive into any heavy-duty editing. One other warning: Many desk accessories, especially "corner clocks", make use of the right hand side of the menu bar. Because X-oR uses this space for some prompts, we suggest that you avoid such DAs, at least until you are comfortable enough with the program that you can live without that information.

X-oR has been successfully tested with several manufacturer's multi-tasking environments, including the forthcoming MIDITasking environment from Atari. If you have enough memory in your computer, you should be able to run X-oR concurrently with just about any major Atari ST sequencing program.

## Organizing Your MIDI Setup

X-oR can bring all your MIDI equipment together as a team. But first, in order to do this, both your equipment and your creative modus operandi must be compatible. We have a general rule for this:

### **If it ain't programmable, don't program it!**

This rule applies to repatching audio cables, MIDI cables, changing non-programmable MIDI Channel assignments, etc. Luckily, products are available which make virtually everything programmable. A MIDI switcher, for example, is a relatively inexpensive way to improve your sanity.

Of course, unless you have a MIDI programmable robot, some important things are bound to be out of X-oR's control. For this reason, X-oR gives you plenty of opportunities to save comments with your data, reminding you to "turn up effects send 2 on mixer channel 5," or any such non-programmable tidbit of information.

## Customizing X-oR for Your MIDI Setup

X-oR's most powerful and exciting features are made possible by customizing it to your particular MIDI setup. When X-oR knows what instruments you have, how they are connected, where you want to store their data, etc., it can automate many tasks. For example, X-oR is capable of loading, saving, getting, or sending **all** the System Exclusive data in your MIDI setup with a couple of clicks of the mouse.

Getting MIDI data from Instruments (and also sometimes sending data) requires two-way (bi-directional) MIDI communication, which means repatching your system. X-oR is designed to handle all MIDI patching functions automatically, by taking control of your system's programmable MIDI switcher or patch bay, if you have one (look, ma, no hands!). Otherwise, X-oR will instruct you to make certain connections when necessary. You don't *need* a programmable MIDI switcher to use X-oR, but we strongly recommend it!

Teaching X-oR about your system is not going to be as relaxing as a day at the beach, but it only needs to be done once. The next chapter contains complete step-by-step instructions on setting X-oR up, along with examples for a typical system.

To get a feel for X-oR, you could skip ahead to the end of the next chapter, and run it with its example setup. However, the setup process must be done before X-oR will be of much use to you.

## **X-oR's Hidden Charms**

X-oR has a lot of power, and not all of it can be discovered by just poking around. If you read this manual, you stand a fairly good chance of discovering all its features. As with any tool, the more you know how to use it, the better it works.

## Chapter 2

### A Step-By-Step Customization Guide

This chapter covers all of the steps needed to customize X-oR to work with your system. Normally, this will only need to be done once, though you can modify the setup at any time if you add new Machines or change your setup.

By way of example, we'll also show exactly what is needed to configure a typical MIDI system consisting of an Ensoniq ESQ-1, Yamaha TX-81Z, and a Casio CZ-101. Your system is probably much different than this, but this will serve to illustrate the principles involved.

If you run into snags, refer to Chapter 10, which contains a complete description of the **Instrument Setup** window, or to Chapter 9, which describes the **System Parameters** window. If you have problems getting one particular Machine configured, or if one aspect of your system hasn't been nailed down yet, just ignore it for now; you can always go back and correct the setup after everything else is working.

## Hard Disk Setup

If you're using a hard disk for data and program storage, the first thing you'll need to do is copy X-oR to your hard disk, and then set up the folders that you'll be using for data storage. (In this section, we'll assume that you know how to perform basic disk operations such as creating a folder and copying files; if you're not sure how to do this, see your ST manual for details.) If you've been using your hard drive for a while, make sure that the partition you use has enough space to hold all of the programs, Profiles, and data files you'll be storing there, as well as room for expansion. (A half-megabyte per synthesizer is probably adequate.)

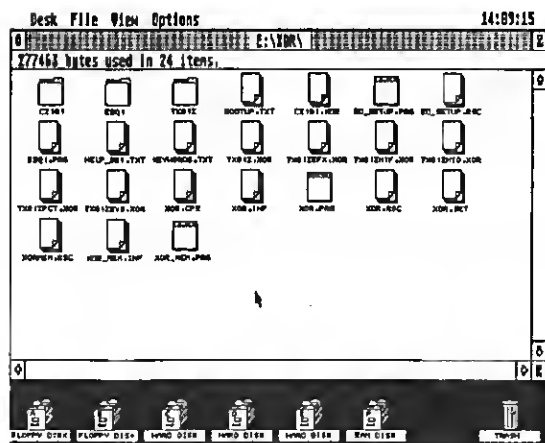
1) Create a folder called XOR, and copy the files XOR.PRG, XOR.RSC, XOR.CFG, KEYWORDS.TXT, BOOTUP.TXT, HELP\_SET.TXT, ED\_SETUP.PRG, and ED\_SETUP.RSC to this folder. If you plan on using X-oR in Dr. T's Multi Program Environment, you should also copy the files XOR.INF, XOR.MEM.PRG, XORMEM.RSC, and XOR\_MEM.INF to the folder XOR.

2) Now create a new folder for each Machine that you own (these folders could be inside the XOR folder if so desired). Each folder should be given a name that represents the Machine it supports. For the sample system described above, you would create three folders: CZ101, ESQ1, and TX81Z. (Note: if you're using a Mega computer, make sure your folder names are no longer than seven characters—otherwise, a bug in the Mega operating system will bite you.)

3) Now insert the PROFILES disk in drive A. For each Machine that you own, copy the appropriate file with the .ARC extension into the XOR folder. For our example system, copy CZ101.ARC, ESQ1.ARC, and TX81Z.ARC. Also copy ARCX.TTP, which is a program you'll need.



4) The files you have copied are "archived", or simply "arced", which means they are compressed so that more of them can fit on the disk. You now need to "de-arc" them. Using your work disk, double-click on ARCX.TTP to run it. In the box that appears, type in the name of the .ARC file--CZ101 for example--and hit <Return>. Do this for all the .ARC files you copied in step 3. The XOR directory should now contain files with .XOR and .HLP extensions for all your Machines--check to make sure that it does. Your XOR folder should look something like this:



Folders

5) If you've been using any Caged Artist editor/librarians, copy the data files for these programs to the appropriate data folders. You should have a separate folder for each Instrument, and the folder should contain ALL the data for that Instrument.

## Floppy Disk Setup

If you're using a floppy disk system, you'll first need to create a "working copy" of the X-oR program disk, and then copy X-oR, its support files, and the Profiles for each of your Machines to this disk. We suggest that you use either a RAM disk, an "alternate desktop" program such as NeoDesk, or some other file moving utility for this task, if you have one. The standard GEM file copy function is woefully inadequate for copying files between two floppy disks, as you may have discovered.

1) If you don't have a formatted disk handy, insert a blank disk in drive A, and format it as a double sided disk.

2) Insert the X-oR program disk in drive A, and copy the files XOR.PRG, XOR.RSC, XOR.CFG, KEYWORDS.TXT, BOOTUP.TXT, HELP\_SET.TXT, ED\_SETUP.PRG, and ED\_SETUP.RSC to the blank disk. (If you don't know how to copy files from one disk to another, see your ST manual.) If you plan on using X-oR in Dr. T's Multi Program Environment, you should also copy the files XOR.INF, XOR\_MEM.PRG, XOR\_MEM.RSC, and XOR\_MEM.INF.

3) Now insert the PROFILES disk in drive A. For each Machine that you own, copy the appropriate file with the .ARC extension to your work disk. For our example system, copy CZ101.ARC, ESQ1.ARC, and TX81Z.ARC. Also copy ARCX.TTP, which is a program you'll need for the next step.

4) Insert the work disk in drive A. The files you have copied are "archived", or simply "arced", which means they are compressed so that more of them can fit on the disk. You now need to "de-arc" them. Double-click on ARCX.TTP to run it. In the box that appears, type in the name of one of the .ARC files--CZ101 for example--and hit <Return>. Do this for all the .ARC files you copied in step 3. The work disk should now contain files with .XOR and .HLP extensions for all your Machines--check to make sure that it does. After this step, you may erase the .ARC files on your work disk.

5) Now format one floppy disk for each Machine in your system, and write the name of the Machine on each. These will be used for storing data for your Machines.

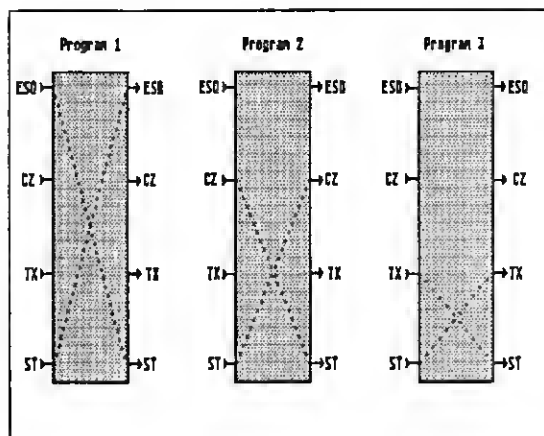
If you find that your working disk does not have enough room for the Profiles you wish to use, you may be able to get enough space by deleting XOR.PRG and XOR.RSC temporarily, and then going ahead with the rest of the setup procedure. Once that is done, delete ARCX.TTP, ED\_SETUP.PRG and ED\_SETUP.RSC from your working copy, and then restore XOR.PRG and XOR.RSC. **Note: DO NOT delete anything from the original X-OR program disk!**

## Set Up Your MIDI Switcher

If you're using a programmable MIDI switcher, the next step is to set up your switcher, and create the switcher programs that will let the computer talk to each of your Machines independently.

Before you proceed, make sure that your computer is connected so that it can send program changes to your switcher. Some switchers only accept program change messages on a certain Input, while fancier ones make the Input programmable. Whatever the case, make sure the switcher's "control Input" is connected to the computer's output.

Because each MIDI switcher is different, we can't give you any specifics on how yours must be programmed, but we can give some general advice. The first program in your switcher (or maybe the first few programs) should connect your system up in its normal configuration(s) for making music. You'll then need to create a program for each of your Instruments, which connects the instrument's MIDI output to the computer's MIDI In, and the computer's MIDI out *only* to the instrument's MIDI Input, as shown below. Any special functions that your switcher has, such as data filtering, transposition, or *especially* MIDI merging, should be turned off in each of these programs.



#### MIDI Switcher Programs

As you create these programs, write down the switcher program number assigned to each Instrument, and determine the program change number to send which will select this program.

If your switcher doesn't have enough inputs for all of your synths, you'll have to decide which ones you'll be getting data from the most often, and connect those to the switcher's Inputs. The other Machines will have to be patched manually when you need to get sounds from them.

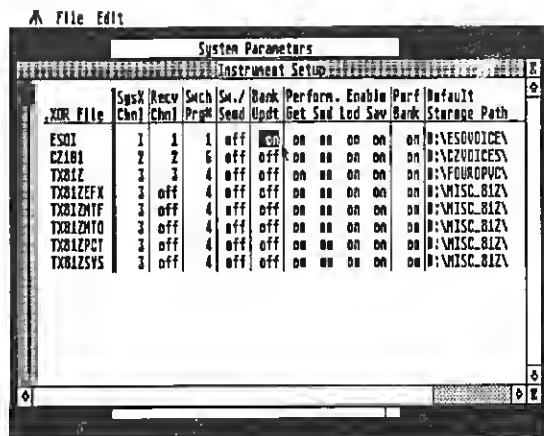
## **If You Don't Have A Switcher...**

...don't despair. X-oR can be used quite effectively in most situations with only one-way communication. To get this happening, all you need to do is connect your computer's MIDI output to the MIDI input of each of your Instruments, either with a thru box or using MIDI thru jacks. If you're using your ST for sequencing, it's probably already set up this way. **DO NOT** use the MIDI outputs of your Instruments to drive the MIDI Inputs of the others, even if the Instrument has a MIDI merge, echo, or software thru feature. This is because most software thru's won't echo MIDI system exclusive data, not to mention the fact that you'll have to do major repatching if you need to get data from your Instruments.

On the input side, things get a bit more complex without a switcher. If you presently can't afford a programmable MIDI switcher (i.e. you just spent your last dime on X-oR), you might consider getting (or making) some kind of cheap manual switch box, with enough inputs to handle all of your Instruments. Alas, the manual switchers we know of have at most five or six inputs. You may be better off saving your pennies for a programmable switcher. In the mean time, you could have a clump of well-labeled cables from all your Instruments next to your computer (at least it beats crawling around behind the racks).

## **Create the Setup File**

Now we're ready to create X-oR's setup file. This is done with the program `ED_SETUP.PRG`. (If you're using a hard disk, you've already copied this to the XOR folder; otherwise, you copied it to your working disk.) Start `ED_SETUP.PRG` by double-clicking on its icon, and the following screen will appear:



EO\_SETUP.PRG Main Screen

The **Instrument Setup** window will soon contain a list of all of the Instruments in your system, along with their system exclusive channels and other important settings. Your system is probably not exactly the same as our example system, so you'll need to add your own Instruments, and delete some of the example Instruments. Instruments are added one at a time, using the following procedure for each.

- 1) Pull down the **Edit** menu and select **Add Instrument**. A new Instrument specification will appear on the screen, with the title **XORFILE**.

- 2) Now you'll choose the Profile that this newly added Instrument will use. Click on the word **XORFILE**, and a file selector will appear. Use the file selector to choose the Profile for the new Instrument, and click on **OK**. The Profile name you selected will now be shown, instead of **XORFILE**.

## Create the Setup File (continued)

3) Click on the number in the column labeled **SysX Chnl**, and use the slider or computer keyboard to enter the Instrument's system exclusive channel, unit number, device number, or whatever value it uses to identify incoming system exclusive messages. This is usually defined differently for different Machines—some may use the same number that is used for the MIDI basic channel, others may use a completely separate number, and a few may not even have such a number. You may have to spend some time scratching your head and thumbing through your synthesizer's manual to get this right, if you've never dealt with it before.

4) Each Instrument has a default MIDI Receive Channel (shown here as **Recv Chnl**). At this point, we won't go into what this entails, since it's not essential to get X-or running. However, in most cases, this channel is the same as the **SysX Chnl**, so click on the **Recv Chnl** number and enter the same number you used for **SysX Chnl**. (This won't be possible if the **SysX Chnl** is greater than 16, in which case, set the **Recv Chnl** to off.)

5) If you're using a MIDI switcher, click on the number in the column labeled **Swch Prg#** (Switcher Program), and enter the number of the program that you created specifically for this Instrument (keep in mind that our program change numbers start at zero, not one). If you don't have a switcher, or if your switcher is short of inputs and can't receive data from this Instrument, set this to **off**.

6) If this Instrument is one of two or more identical Instruments that share the same **SysX Chnl**, set the **Sw./Send** (Switch to Send) parameter to **on**. Otherwise, leave it **off**.



7) If you have a hard disk, you will now need to tell X-oR where the data for the Instrument should be kept. Click on the text in the **Default Storage Path** column. A file selector will appear, with which you should change the drive letter (if necessary), and open the folder that you created earlier for this Machine (in step 2 of the hard disk setup), as if you were going to load a file from the folder. Then, click on **OK**. The storage path you have chosen is shown. If you **DO NOT** have a hard disk, the default storage path should be "A:\\" (no quotes).

8) Now repeat steps 1 through 7 for each Instrument in your system. If you have two Instruments of the same type—two DX-7's, for example—you'll need to create two separate Instrument specifications, each with its own switcher program and system exclusive channel. (If you have two identical Machines on the same channel, make sure that **Sw./Send** is turned on.) For Machines that use multiple Profiles, such as the TX-81Z, you will need to repeat these steps for each Profile.

9) Delete any Instruments that were left over from the example setup by clicking on any parameter in the Instrument's line, and then choosing **Delete** in the **Edit** menu.

10) Click on the window labeled **System Parameters** and set the parameter labeled **MIDI Switcher Channel** to the channel on which your MIDI switcher accepts program changes. If you aren't using a switcher, set this to off.

11) If you're using a switcher, set the **Default Switcher Pgm** to the program change number that calls up the normal music-making system configuration. If you're switcher-less, set this to off.

## Create the Bootup Comments

12) When you've finished creating the setup, pull down the **File** menu and select **Save** to save your setup to disk.

You've probably noticed the four columns labeled **Performance Enable**. Don't worry about these for now—they are used to "disconnect" each instrument from certain "macro" operations, and can be turned off later if needed.

When you first boot X-OR, it will automatically print a page of comments on the screen to remind you of things that need to be done to each Machine before you can use it. For example, some Machines must have system exclusive reception enabled each time they are turned on, or you might want to initiate auto-tuning on any analog synths that you own. To edit this message:

1) Pull down the **Edit** menu and click on the **Boot-up Comments** option. A page of comments will appear on the screen.

2) Now mentally run through the list of things that you normally do each time you turn on your system, and enter some reminders about what needs to be done. (See the description of X-OR text editing procedures on page 11 if you're not sure how to edit the text.) When you've completed your comments, click on **Save**.

**NOTE:** Most X-OR Profiles will send start-up System Exclusive messages to initialize a Machine if possible, but some Machines still need a hand.

## **Prepare for Lift-off**

Congratulations! X-oR is now ready to handle all of your system's sound management needs. Now you're ready to load and run X-oR itself, and explore its menus and windows with the help of this manual. Pretty soon, you'll wonder how you ever got along without it!

## **Starting X-oR**

To run X-oR as a stand-alone application, open the desktop window where XOR.PRГ is located and double-click on its icon. If you have a hard disk, you should put your original program disk in drive A, but start X-oR from the XOR folder on your hard disk. Otherwise, you'll start X-oR from your working disk. If necessary, X-oR will ask you to insert your original program disk in drive A. Simply insert the disk, click on OK, and you should be up and running.

To start X-oR in the MPE, refer to the manual of your MPE host program to determine the proper command to use. For example, in KCS (version 1.7) you would click on the NEW button in any Edit screen. When the file selector appears, select XOR.INF from the hard disk or working disk, and after a few seconds, the program will be up and running. If you get an "Insufficient memory" message when you attempt to load X-oR, see Chapter 11 for details on changing X-oR's MPE memory allocation.

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## Chapter 3

### X-oR's Menus

X-oR uses standard GEM dropdown menus for all of its commands. The **Desk** menu allows you to access your desk accessories. The **File** menu deals with most disk operations, with the exception of Library files, which have their own **Library** menu. The **Edit** menu includes options and commands for both Bank editing and Patch editing. All the commands to transmit or receive Patch, Bank or Performance files are found in the **Get/Send** menu. X-oR's **Options** menu includes the means to choose most of X-oR's important global parameters and options. Finally, the **Info** menu provides information about the current Profile, along with a few other important facts. Most of these menus and their commands will be covered in later chapters, but in this chapter we'll discuss a few important **File** and **Info** menu commands.

### The File Menu

The **File** menu, which is found in just about every GEM program, is used to access the computer's disk drives. Because X-oR has to deal with so many different types of files, its **File** menu is a little different than that found in most programs.

The first block of items in the **File** menu are used to open, close, and save Bank windows. These items are described in detail in Chapter 6, so there's no need to discuss them here.

The next few items are used to save and load Patches and Performances. Again, there are no real surprises here; for more information on these options, see Chapters 5 and 8.

## Save and Save As...

The two items just above the **Format** option in the **File** menu are used to save the contents of the current active window (the front window). The exact functions of these items will change depending on which window is active. If the **Performance** window is on top, then the **Save** option will be **Save Performance**; if the **Patch Edit** window is active, it will be **Save Patch**, etc. This may seem to be somewhat pointless at first, since it almost always results in duplication of some other menu item. The real advantage to this scheme lies in the <Control> key equivalents for these items. <Control-S> always duplicates the **Save** item, and <Control-A> does the same thing as **Save As...** This means that, in order to save the contents of whatever window you're currently working in, all you have to do is press <Control-S> to save it under its existing name, or <Control-A> to save it with a new name.

## Format

This command formats the disk in drive A. After selecting **Format**, a dialog box will confirm this choice, and then a second dialog box will ask if you wish to format the disk as a single or double sided disk. (If you only have a single-sided drive, don't choose the **Double** option.) As always, formatting a disk erases all data on the disk, so do be careful, okay?

## Quit and To KCS

The last item in the **File** menu is used to leave X-oR. When using X-oR as a stand-alone program, this item is labeled **Quit**, and causes a complete end to everything you are doing. All data will be lost, and you will be returned to the Desktop.

When running X-oR in the MPE, however, **Quit** is replaced by **To KCS**. Clicking here takes you back to the MPE host program (e.g. KCS or Tiger Cub), without disturbing any data stored in X-oR. You can then return to X-oR by selecting it from the host program's **MPE** menu. You may also terminate X-oR from the MPE host program (see the MPE host program's manual for details).

Any time you quit X-oR, it will ask you if you want to save any edited data. This will only occur if there is an edited Patch or Bank that has not been saved to disk, so if you get such a message when you leave the program, simply click on **Cancel** and then look for asterisks beside the names of one or more windows, or check marks beside Patch names in the **Performance** window, which indicate that the contents of that window have been edited, but not saved. Note that no warnings are given when you return to the MPE host with **To KCS**, which means that you're on your own!

**The Info Menu** | The **Info** menu includes the **Profile Help** command, information about the Profile, the amount of free space left for Bank and Library files, and the current Mouse Channel. **Profile Help** (described below) is the only real command in this menu. The other Profile-related information is intended to help solve Profile problems by providing the X-oR and Instrument ROM versions the Profile was tested with, the author of the Profile, and the date it was last modified. If you have a Profile problem, you should provide this information to the Dr. T Product Support staff (provided, of course, that it is done by one of our authors--if not, please try to contact its creator).

## Profile Help

The **Profile Help** command in the **Info** menu loads and displays a file with the same name as the Profile, but with the suffix **.HLP** instead of **.XOR**. If it fails to find this file, it will let you load any other **.HLP** file. If necessary, the file will keep scrolling when you click the mouse or press a key, until you've seen it all. Sorry, you can't scroll backwards—maybe next version.

A high percentage of our user support calls are related to Profile problems. To save our poor, overworked support staff, all we ask is that you read the help file before calling. The help file tells you about the quirks of the Instrument, the operation of the Profile, and any known problems.

## Backups in X-oR

If you've used any kind of computer program before X-oR, you've probably been drilled in the importance of backups. While we don't want to belabor the obvious, you should remember that, **as a computer musician, your art, career, vocation, or whatever you wish to call it is dependent on your sound data files. If you lose them, you've lost the foundation of your work.** We suggest that you periodically make multiple copies of both your Libraries and Banks, and keep them in a safe place.



## Chapter 4

### Auditioning Sounds with X-oR

It's important to have a good, easy way to monitor your actions with X-oR--to check out the sounds that you've selected and edited. It's also important to have a variety of ways to do this. Most of the time, a quick solo check is all that's needed, but sometimes, when you're doing a sequenced piece of music, you want to hear the sound in a particular musical setting.

To cover all the bases, X-oR has several sound auditioning methods. Our much imitated (but never duplicated) full-screen Mouse Play feature is the fastest and best way to get a feel for a sound. If you need to hear a sound polyphonically, X-oR can combine the MIDI output of your master keyboard (or guitar or whatever) with its own MIDI output. It will even alter the channel automatically to play whatever Module is currently selected in the Performance window. On occasion, you may need to hear how a patch sounds in the context of a sequenced piece of music. For this, you'll need a Dr. T's sequencing program such as KCS or Tiger Cub, which integrates with X-oR to provide several more ways of auditioning a sound.

### Mouse Play

X-oR lets you use the right mouse button to play any of your instruments. The basic concept is simple: notes are left to right, velocity is up and down--kind of like playing a keyboard with one finger. Other tricks and options make Mouse Play even more fun (and more useful). For example, the Mouse Play options in the Options menu, and **Mouse Mod Controller**, **Mouse Scale**, and **Mouse Key Shift** in the System Parameters window. Using all the options, the mouse actually becomes an interesting and very playable musical instrument.

Basically, when you press the right mouse button, a note is played. Its pitch and velocity are determined by the mouse position. Low pitches are on the left side of the screen, high pitches on the right, and high and low velocities at the top and bottom of the screen, respectively.

The Mouse Play option, selected by clicking on one of the five **"Play"** items in the **Options** menu, determines what happens when the right mouse button is depressed (no, it doesn't automatically play the blues when it's depressed). If set to **Play Notes**, a right mouse click will play a single note each time it is pressed, and will hold the note until the button is released. If set to **Play Glissando**, dragging the mouse left or right while holding the button down will create glissandos.

The <Shift> and <Alternate> keys let you add inflections to your mouse music. If the <Shift> key is held down, the Mouse Play option will be temporarily set to **Glissando**, which lets you insert glissandos in normal (single-note) mouse play. The <Alternate> key turns the mouse drag motion into pitch bend, so that moving the mouse left or right with the <Alternate> key pressed bends pitch up or down.

**Play Sequence**, **Play Range**, and **Play Cue** are available only when X-oR is running in the MPE, and cause the right mouse button to play the current sequence, range or cue. These are described in Chapter 11.

### **Mouse Mod Controller**

When the right mouse button is held down, pressing the left mouse button causes MIDI controller messages to be sent. The MIDI controller number to be used is specified by the **Mouse Mod Controller** parameter, which is found in the **System Parameters** window. It can be set to aftertouch, or any MIDI continuous controller from 1 to 31. The controller value sent depends on the vertical position of the mouse. Values are continuously updated as you drag the mouse up and down with both buttons pressed. When the left button is released, the controller goes back to zero (unless it happens to be volume (MIDI controller 7), in which case it stays where you leave it). The full range of controller values (0-127) is available in the middle 2/3rds of the screen. Use this feature to test the expressive range of various controllers in the sound you're working on.

### **Mouse Scale**

This parameter, located in the **System Parameter** window, gives you 13 different scales that can be used for Mouse Play. All notes played will be quantized to fit the chosen scale, making it easy to create "tuneful" music with the mouse. Choices include major, harmonic minor, chromatic, whole tone, and several other scales.

### **Mouse Key Shift**

This sets the base key for the mouse scale, to any value from C to B. You may type a number from 0 to 11 to set this parameter.

## Mouse Channel

Most Modules in your system will have their own MIDI receive channels, which are shown in the left-most column of the **Performance** window. This is almost always the channel on which you'll want the mouse to play when you're working with a Module. Therefore, X-oR automatically changes the Mouse Channel to the Module's receive channel whenever a new Module is selected in the **Performance** window. However, if the Module's receive channel is set to neutral (shown as "-"), it will not be changed automatically.

This automatic Mouse Channel selection is enabled or disabled by the **Auto Channel Select** menu switch (in the **Options** menu). If the switch is on (i.e. it is checked) the Mouse Channel changes automatically, as described above.

The Mouse Channel can also be manually changed at any time using the ST's ten function keys. The keys <F1> through <F10> set the Mouse Channel to MIDI channels 1 through 10, and channels 11 through 16 may be selected by pressing either <Shift> key along with the keys <F1> through <F6>.

In theory, you should rarely need to adjust the Mouse Channel manually. However, "multi-timbral setup" Modules have more than one MIDI receive channel, so which does X-oR pick as the Mouse Channel? Some Profiles use their own logic to pick a relevant receive channel (which in turn sets the Mouse Channel), while others leave it for you to change the Mouse Channel manually.

The current Mouse Channel is always shown in the **Info** menu, giving you visual confirmation whenever you may need it.

**MIDI Merging** | MIDI merging "echoes" the data received at your MIDI input to the computer's MIDI output, which lets your master keyboard or other MIDI controller play "through" the ST, while you're editing sounds with X-oR. (MIDI merging and system configurations are discussed in Appendix 2.)

X-oR's Merge function is basically either on or off. When Merge is on, there are two additional merge options: Solo, and Rechannelize. In basic Merge mode, data on all 16 MIDI channels is passed through the computer. With the Solo or Rechannelize options, the Incoming data is filtered or modified such that the outgoing data is entirely on the Mouse Channel.

The Mouse Channel can be thought of as the "Solo/Rechannelize/Mouse Channel." With the Solo option, only data on the Mouse Channel is merged with the output from X-oR; all other data is filtered. With Rechannelize, MIDI data on all 16 channels is merged, but every channel is changed to the Mouse Channel. Solo is especially useful if you're merging data from a sequencer, and wish to hear only a single channel, while Rechannelize is handy for automatically switching the output of a master keyboard to play the current Module.

Merge is controlled by three menu switches in the Options menu; Merge, Solo and Rechannelize. Merge is the master merge on-off switch, while Solo and Rechannelize toggle the merge options when Merge is on. If Merge is off, and you select Solo or Rechannelize, X-oR will turn Merge on and select the option.

When Merge is on, X-oR needs to keep track of notes received and transmitted, so that it will know when to allow changes to occur without causing notes to "stick" (i.e. act as if a key were stuck in the down position). If you get a prompt saying "Notes on?", releasing all keys should allow the program to continue. If not, you'll have to hit the <Return> key on the computer or a mouse button to continue. The Panic command, in the Get/Send menu, can also be used to turn off any stuck notes.

If you use Merge, and any of your Machines have a MIDI overflow mode or MIDI merge mode, it is possible to form a MIDI feedback loop, in which case everything will freeze (or maybe even crash). If this happens, don't panic—just disconnect one of the MIDI cables attached to the ST to break the loop, then track the problem down and fix it.

The Filter Program Changes switch in the Options menu determines whether program change messages will be passed or filtered by X-oR's Merge function. Generally speaking, you will want to prevent program changes sent by your master controller from being passed on to other Instruments in the system. These program changes can only cause confusion, since X-oR is supposed to be handling all program management chores. Therefore, this switch should always be on, unless you have a special need.

## Local Control?

Note that, if your master keyboard is part of a synthesizer or sampler that has its own tone generating circuitry, you may want to turn local control off in this Instrument. Otherwise, each time you play a note, two notes will play—one from the synth itself, and one on whatever tone module is listening to the keyboard. Worse yet, if the synth is listening to itself via MIDI, two notes will be played on that Instrument, and you'll be left wondering why your eight-voice synth only plays four notes. If the keyboard that you are using as the master controller does not have some sort of "local control off" mode, it's not a very good choice for use as a master controller, no matter *what* the salesman told you.

## Panic

The **Panic** command, found in the **Get/Send** menu, is for emergency use only. It sends an All Notes Off message on each MIDI channel, along with note off messages for all 128 MIDI notes. It also sets the pitch bend to zero on each channel, and turns off the sustain pedal as well. Use this if any notes "stick" while you are playing. The **Panic** command is duplicated by the <Control-Z> key combination.

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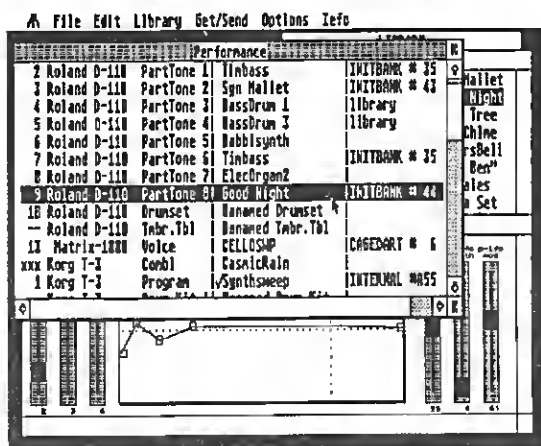
## Chapter 5

### The Performance Window

The most important conceptual structure in X-or is probably the *Performance*. X-or achieves its high level of integration by dividing your MIDI system into modular components (Modules), and then recombining the Modules into a Performance. It's like a gigantic Multi-Patch, spanning all your instruments.

A Performance file contains the current Patch data for each and every Module, along with some Instrument-level information (e.g. the mode of the Instrument and the Instrument's current Bank file). The function of the Performance file is to save and restore the entire state of your MIDI setup.

In addition to showing the current Performance, the Performance window functions as the control center for most of X-or's other windows. The Performance window is so important that when you first boot X-or, it will be open; and unlike the other windows in X-or, it can never be closed. The Performance window is shown below:



The Performance Window

Each line in the Performance window lists a Module, and the name of the current Patch for that Module. The current (i.e. selected) Module is highlighted--this is the Module that affects, and is affected by most of X-oR's windows and menus. A Module can be selected by clicking anywhere on its line. Whenever you select a new Module, windows for the last selected Module will disappear, and windows for the new Module will open (if necessary). This feature makes the Performance window the center of the program, since most functions in X-oR involve only the currently selected Module.

One important point to keep in mind is that when you select a new Module, the windows for the current Module will be closed, but the data they contain will not be lost. As soon as you return to a previously selected Module, its windows will be reopened.

## **Performance Window Display**

The Module Status/Receive Channel Display (the left-most column of the Performance window) is used to show the current status of each Module. Normally, it shows the channel on which the Module is receiving voice messages (notes, controllers, etc.). Modules which either don't respond to voice messages, or which respond on multiple MIDI channels may be shown as "--". Modules which are completely inaudible in the current Performance are shown as off. A designation of "xxx" signifies that the Module does not correspond to the current mode of its parent Instrument. For example, a TX-81Z may be in either "Performance" or "Single" mode, but never both at once. When a Module is marked "xxx," it usually means that if you select the Module, the mode of the Instrument will be changed to make the Module active (making other areas inactive, if necessary).

X-oR also shows a question mark (?) if it thinks a Module's Patch data may be out of sync with the actual data being used by the Instrument. You will notice that all the Patches have question marks when the program boots. Patches become "in sync" when they are received or transmitted. The only way a Patch can become out of sync is if another patch (usually a multi-timbral patch) is sent which causes the patch to change in the synth, and X-oR is unable to duplicate the change internally. This may occur, for example, if a multi-timbral patch uses presets stored in the Instrument's ROM, or if the Instrument's Internal Bank file is not open.

The patch status also has an important function when a Performance file is saved and later reloaded, as described on page 45.

## **Editing Performances**

Since Performances consist of all the current Patches and Banks in your X-oR setup, the Performance is edited simply by sending different Patches or Banks to your Instruments. Clicking on any Patch in any open Bank or Library window sends the Patch to the current Module, making it part of the Performance.

Editing a Patch also edits the Patch in the Performance. A check mark will appear beside the name of any Patch that has been edited, until it's been stored or saved. If the Patch is only saved with a Performance file, the check mark will not go away, because edited patches should be saved where they can be retrieved individually (i.e. in a Patch file, Bank file or Library).

Ideally, the contents of the Performance window should represent the "running" state of the MIDI system at all times. Because a Patch (or part of a Patch) is sent to the system every time you do anything in X-oR, such as moving a Patch to another location within a Bank, or selecting a Patch from a Library, the contents of the Performance will change almost continuously during an X-oR session. For this reason, you should save your Performances as soon as they are set up to your liking, since further X-oR operations will change their contents.

### Getting and Sending Performance Patches

When **Get Perf Patches** is selected, X-oR will go through the list of Modules and ask each one to send its current Patch to the computer. If any Module does not respond, an alert box will appear which will tell you what has happened, and allow you to try again (**Retry**), to skip to the next Module in the list (**Continue**), or to terminate the **Get** operation (**Cancel**).

If you're using a programmable MIDI switcher, getting Patches from your system will be extremely easy. If you are using a manual switcher or are patching by hand, X-oR will ask you to connect the appropriate Machine to the computer's MIDI input before it gets any data. (Just one more reason to buy that programmable switcher!) In the case of certain oddball instruments that do not have any kind of MIDI request messages, X-oR will ask you to Initiate a dump from the Machine's front panel at the appropriate time.

No matter how clever a Profile is, some will be unable to determine the mode of the Instrument when **Get Perf Patches** is used. If so, the Profile may have to assume that the Instrument is in the mode that X-oR previously thought it was in. You should verify the mode of such Instruments before saving a Performance.

**Send Perf Patches** sends the Patches in the current Performance to the MIDI system. Performance Patches are also sent automatically when they are loaded with the **Load Performance** menu item, as explained below. Because of this, and because the Performance should already represent the current state of your setup, there is rarely any reason to use the **Send Perf Patches** option.

If either the **Get** or **Send** switches in the **Performance Enable** section of the **Instrument Setup** window are turned off for a particular Instrument, the Instrument will be ignored during the corresponding operation. See Chapter 10 for more on these switches.

The **Send Perf Patches** command (as with **Load Performance** below) WILL NOT send patches which are switched out of the current mode (marked "xxx"), or those which are out of sync (marked "?").

## Loading and Saving Performances

Performance disk operations are handled with the **Load Performance** and **Save Perf As...** items in the **File** menu. If the **Performance** window is the front window, then the menu option **Save Performance** can also be used to save the Performance.

A Performance file contains the data and comments for each of the Patches contained in that Performance, as well as a set of comments for the Performance itself. When **Save Performance** is selected, the current Performance will be saved under its existing name, unless it has not been named, in which case a file selector will appear. All other operations always use the file selector. When **Load Performance** is selected, the Performance will be loaded from disk and then sent to the MIDI system.

If either the **Load** or **Save** switches in the **Performance Enable** section of the **Instrument Setup** window are turned off for a particular Instrument, that Instrument will be ignored during the corresponding operation. See Chapter 10 for more on these switches.

As we have mentioned, Performances may also refer to Bank files. For complete information on how Bank files are treated by the **Load** and **Save Performance** commands, see the sections beginning with **Internal Bank files**, in Chapter 6.

### **Patch Status in a Performance**

The data and status of each patch is saved with an X-OR Performance. The status determines exactly what will happen when the Performance is reloaded. Patches which are switched out of the current mode (xxx) are not reloaded at all. All other patches will have their data restored, but patches which were Inaudible (off) or out of sync (?) are NOT sent. This should successfully return the instrument to the mode it was in when the Performance was stored, as well as restoring all the necessary data for that mode.

### **Performance Comments**

When the **Performance** window is on top, the **Comments** option in the **Edit** menu allows you to edit a 255 character comment field for the current Performance. These comments are saved with the Performance when it is saved to disk.

### **Printing Performances**

A list of the contents of the current Performance, along with its comments, may be printed by selecting **Print** from the **Edit** menu. Because **Print** actually prints the contents of whatever window is on top, the **Performance** window must be the top window when printing the Performance.

## **Chapter 6**

### **Bank Operations**

Banks are collections of Patches that can be sent to a single Instrument as a group. The size of the Bank will depend on the storage capacity of the individual Instruments. For example, an ESQ-1 Bank consists of 40 Patches, and a CZ-101 Bank contains 16 Patches. Depending on the design of the Profile, a single Bank may contain Patches for only one Data Type, or for several Data Types within a single Instrument.

X-oR has a full complement of Bank editing features, including click-and-drag editing, and options for storing and retrieving all of the Banks in your system as a group. These features, and most other Bank operations, are discussed in this chapter.

### **Bank Windows**

Bank windows show all the Patches in a Bank file which apply to the current Module (i.e. Patches of the correct Data Type). Bank windows are sizeable both vertically and horizontally, and may be put into full-screen mode as well. The available space in the window is filled with as many columns of patch names as possible. The number of characters in a patch name and the patch numbering style are set by the Profile, using the format and conventions of the given Machine.

A File Edit Library Det/Send Options Info									
INTERNAL.T1 (4)									
0	000	Guitilda	050	Bomba Trem	000	Ban World	050	Palmira	0
9	001	Piano 16'	051	E.Piano 4	001	Piano2 16'	051	Piano2 8'	9
10	002	Bass 1	052	TubaFlugel	002	Alto Sax	052	Accordinn	
--	003	Bob/Hhh	053	Volca Mava	003	Spectrum 2	053	Ballsynth2	
13	004	Guitar 1	054	Guitar 2	004	E.Bass 2	054	Moodain	
xxo	005	Battiball	055	...	005	Marimba	055	Spec.Junk	
1	006	Fretless	056	Kata-Buss	006	Res-Synth1	056	Cho Volca	
--	007	Symphonic	057	OrcaString2	007	Strigorch	057	OrcaString1	
--	008	Pan Flute	058	Soft-Balls	008	Woodsweep1	058	Synthbass3	
	009	KL Drums	059	Thunder	009	TL Drums	059	Vala*Gated	
10	010	Pan Mallet	060	Claud Rine	010	Stonesynth	060	Footess	
11	011	E.Piano 1	061	Clin 1	011	Soft E.P.	061	Pipurgun1	
12	012	Trumpet	062	Tenor Sax	012	Trambana	062	Frenchhorn	
13	013	I sum wind	063	Volcas	013	Wavesweep2	063	Wavesweep5	
14	014	Van Guitar	064	DistGuitar	014	Baaja	064	FingerPick	
15	015	Bibes	065	Windballs	015	Samian	065	Tog Piano	
16	016	Pick Bass	066	Puli Bass	016	Pick-Piano	066	Zmixon1	
17	017	Smustrings	067	Quartet	017	Harp	067	Softstring	
18	018	Flute	068	Black	018	Wavesweep2	068	Suner E.P.	0

A Bank Window

The Bank file name appears at the top of its window. If the Bank has been edited since it was last saved, an asterisk will appear to the right of the name.

## Opening Banks

Bank files may be loaded into X-oR's memory from disk with the Open Bank... item in the File menu. When the Bank file is loaded, a Bank window is opened displaying the names of the appropriate Patches in the Bank file. Up to four Bank windows may be open at any one time. For instance, even if you have ten CZ-101's, you can only open four CZ Banks. The only other constraint is the amount of memory available to X-oR, which is displayed in the Info menu. X-oR can open as many as 128 Bank files at a time, if you've got enough memory.

## Initializing a Bank

A new, empty Bank can be created with the New Bank item in the File menu. The new Bank contains initialized patches (the patch initialization process is controlled by the Profile).



### **Loading a Patch from a Bank**

As you have probably already discovered, clicking on a Patch in a Bank window sends the Patch to the Instrument, and loads it into the current Module's Patch Edit Buffer in the Performance window. We call this "loading a Patch".

### **Storing a Patch in a Bank**

When you have edited a Patch, you may want to store it back into a Bank. The most common way of doing this is to "drag" the Patch from the Performance window to the Bank window (similar to copying a file on the GEM desktop). To do this, click on the current Module's line in the Performance window, and keep the mouse button down. A dotted rectangle appears, which you may drag across the screen with the mouse. When you position the mouse pointer over a location in any Bank window, the location is highlighted. Highlight the location in which you want to store the Patch, and release the mouse.

When a Patch is stored, the Patch edit flag is cleared, the Bank edit flag is set, and if the Patch is stored to the Internal Bank and Bank Updt is on, the patch is sent to or stored in the instrument's internal bank memory. See pages 51 and 53 for more on the Internal Bank.

### **Update Bank Patch**

The Update Bank Patch command in the Edit menu is a shortcut for dragging the current Patch back to the same Bank location from whence it came (the location should already be highlighted).

### **Editing Banks: Copy, Move and Swap**

Patches may be moved or copied from one Bank to another, or within a single Bank, simply by clicking on the name of the source Patch and dragging it to the destination. Three items in the Edit menu determine what will happen to the original contents of the destination Patch when a Patch is dragged from one location to another. If **Drag to Copy** (the default) is selected, then dragging a Patch will copy it to the new location, and the original contents of the destination will be lost. If **Drag to Swap** is selected, then the contents of the source and destination Patches will be exchanged. If **Drag to Move** is selected, then dragging a Patch to another location within the same Bank moves all of the Patches between the source and destination, so that none are lost; when dragging between two Banks, however, it does the same thing as **Drag to Copy**.

### **Renaming a Patch in a Bank**

The name of a Patch in a Bank may be edited by clicking twice on the name, or by clicking once on the current Bank Patch location in the Bank window.

### **Getting and Sending Banks**

The **Get Bank** and **Send Bank** options in the **Get/Send** menu are used to transfer entire Banks to and from the synthesizer via MIDI. When you select **Get Bank**, X-oR will first send the proper program change to your MIDI switcher (if you have one; otherwise, it puts up a prompt telling you to repatch your system), and then send the appropriate system exclusive request message(s) to the Machine. If no data is received, or if the data "smells bad", an alert box will tell you the nature of the error and allow you to try again, or to cancel the request. The received Bank is placed in a new Bank window.

When **Send Bank** is selected, the Bank in the current (top) window is sent to the synthesizer.

**Saving Banks** | Banks may be saved to disk with the **Save Bank As...**, and **Save Bank** items in the **File** menu. Note that these items will only be available if the top window is a Bank window. **Save Bank** saves the Bank under its existing file name. **Save Bank As...** presents a file selector, where you may rename the Bank if you want to.

**Closing Banks** | A Bank file may be closed by clicking on the close window button in the upper left corner of the Bank window, or the current (top) Bank may be closed by selecting **Close Bank** from the **File** menu. If the Bank has been edited since it was last saved, the program will ask if you're sure that you want to close the Bank before continuing, since the contents will be lost when the Bank file is closed.

**Internal Bank Files** | X-oR keeps track of the last bank sent or received from each Instrument. (See page 50 for more on this.) The name of the current **Internal Bank** file is shown in the **Instrument Setup** window. Also, the Internal Bank file for the current Instrument has an "(i)" after its window title. X-oR can even remember this Bank file between sessions, by automatically saving the Setup file when you quit, as described on page 85. This gives X-oR a reasonably good chance of knowing what Bank file is in each Instrument, without having to specifically get or send the data each time you run X-oR.

## **The Perf Bank Switch**

The **Instrument Setup** Window contains a switch labeled **Perf Bank**. With this switch on, the name of the instrument's Internal Bank file is saved along with a Performance. When the Performance is loaded with the **Load Performance** command, the internal Bank file will be loaded and sent to the synth, if necessary. Obviously, this is just the ticket for people who tend to use program changes in their sequences. Also, most multi-timbral Instruments require the internal Bank file to properly recreate a multi-timbral patch.

The internal Bank file for each Instrument is NOT saved when the Performance is saved--only the name of the file is saved. You must save all edited internal Bank files, and it's a good idea to save it before you save the Performance file, in case you want to rename it!

Turn the **Perf Bank** switch on for an Instrument:

- 1) If your sequencer sends program changes to the instrument, or you change programs from the instrument's front panel during the musical performance in question.
- 2) If you are using the instrument in multi-timbral mode. (There are some exceptions to this rule; for example, the MT-32, D-110 and FB-01.)

## Speed Issues when Loading Performances

Sending banks naturally slows down the Load Performance command, but thanks to X-oR's logical operation, only the files which need to be loaded are loaded, and only those which need to be sent are sent. When X-oR first boots, you will notice a question mark to the right of all the Internal Bank file names. X-oR doesn't completely trust the Internal Bank information until a bank has been sent or received in the current X-oR session, in which case the question mark goes away. Therefore, the first time you load a Performance during a session, all the Performance's bank files will be sent. Thereafter, only the changes will be sent. In a live performance situation, you can tell X-oR to load any Performance, and trust that it will do it as quickly as MIDI will allow.

## Bank Update

The **Bank Updt** (Bank Update) feature is meant to ensure that patches stored into the Internal Bank file are also updated in the synthesizer's memory. **Bank Updt** is enabled separately for each Instrument using the **Bank Updt** switch in the **Instrument Setup** window.

This feature is primarily designed to aid the process of editing single timbres within a multi-timbral patch. Typically, multi-timbre patches load single patches from the synth's internal memory. With this feature on, a single timbre which is edited and stored into the Internal Bank is immediately available to the multi-timbral patch.

Example: In a typical X-oR profile (like the D-110 Profile), when you store an edited (single tone) patch (via <Control-U>, for example), the patch is changed in the internal memory of the synth and the multi patch is also automatically edited to point to the correct patch location. This type of integration is rarely found in editor/librarian programs, let alone a universal editor/librarian.

**NOTE:** Copy, Move and Swap operations on the Internal Bank will not be sent to the synth. If you are moving patches around, you may not want to send the changes after each operation, because in many synths, this would slow you down too much. When you're through editing the Internal Bank, you should use **Send Bank**.

## **Bank Comments**

When a Bank window is on top, the **Comments** option in the **Edit** menu allows you to edit a 255 character comment field for the current Bank. These comments are saved with the Bank when it is saved to disk, and are printed when you print the Bank.

## **Printing Banks**

A list of all the Patches in the top Bank window, along with the Bank's comments, may be printed by selecting **Print** from the **Edit** menu. The **Print** command uses the same columnar format as the window, but it is limited to only 80 columns. Therefore, you may need to decrease the window size to fit all the patch names on the page.

## Chapter 7

### Using the Libraries

X-oR's Library menu provides access to the program's Patch Libraries. *Libraries* are similar to Banks, in that they contain collections of Patches for a single Instrument, but they go well beyond the limitations of individual Banks in several ways. First of all, a Library can contain a very large number of Patches, which is usually limited only by the amount of disk storage space available. Second, Patches within the Library can contain additional Information that lets X-oR search for Patches in a manner much like a database. The time and date of the Patch's creation and comments on the Patch are also saved in the Library. One other difference between Banks and Libraries is that each Library only works with a single Data Type, whereas Banks may store data from several Data Types.

An important part of X-oR's librarian is its use of keywords. *Keywords* are short descriptive phrases that you may assign to a Patch, to describe its qualities. Once you have assembled a Library and given each Patch a list of suitable keywords, you'll be able to find specific patches with considerable ease. For example, if you want a "funky bass, that is smooth but distorted", then you can tell X-oR to find all sounds with those qualities--but we're getting ahead of ourselves. In this chapter, you'll learn everything you need to know about using X-oR's librarian functions.

### Creating a Library

If no Library exists for a particular Data Type, use the **Open Library** option to create a new one. After selecting this command, if X-oR cannot find an existing Library, an alert box will ask if you wish to locate the Library, cancel, or create a new one. Just click on **New**, and X-oR will create a new Library file in the folder for that instrument.

## Opening a Library

The Library for the Module currently selected in the **Performance** window may be opened by selecting **Open Library** in the **Library** menu. This opens a window containing a list of the Patches in the Library. One important point to bear in mind is that, unlike the Banks, opening a Library does not load the data into the computer's memory. Only the Library's directory file is loaded into memory. Individual Patches are loaded from the disk as they are selected. This means that, if you are using floppy disks, the disk containing the Library must remain in the drive as long as you are using the librarian, so that X-oR will be able to access the Library as needed.

If no Library exists in the folder for the current Module, X-oR will ask if you would like to create a new Library, or if it should attempt to locate the Library file. When **Locate** is selected, a file selector will appear, which will allow you to search through all of the folders in your system until you locate the Library. (The Library file name is three letters—the Patch file extension—followed by ".Lib".) If you are using floppy disks, and the wrong disk is in the drive when you attempt to access a Library, X-oR will also ask if you want to locate the Library. In this case, insert the proper disk in the drive, and select **Locate** to help X-oR find the Library.

## The LIBRARY Window

The **LIBRARY** window, shown on the following page, contains a list of all or some of the Patches in the current Library, as well as the date and time that the Patch was stored in the Library, and the keywords and comments associated with each Patch.



File Edit Library Set/Save Options Info							
LIBRARY							
Block w/ tone	5/24/89	6:32	am	from COMBOS00.C2V	percussion	block	
Cheesy string	5/24/89	6:32	am	from COMBOS00.C2V	strings	nasal	
Elek Marysl Sos	5/25/89	10:15	am	FLP1-2	keyboard	harpst	
Generic Synth 2	5/25/89	10:15	am	FLP1-8	synth	fast	
Generic Synth 3	5/25/89	10:15	am	FLP1-15	synth	fast	
Generic MahSyn 1	5/25/89	10:15	am	FLP1-9	synth	Mah	
Generic MahSyn 2	5/25/89	10:15	am	FLP1-16	synth	Mah	
High perc organ1	5/24/89	6:32	am	from COMBOS00.C2V	keyboard	organ	
High perc organ2	5/24/89	6:32	am	from COMBOS00.C2V	keyboard	organ	
High vibr organ	5/24/89	8:31	am	from COMBOS00.C2V	keyboard	percus	
High vibr organ2	5/24/89	8:31	am	from COMBOS00.C2V	keyboard	organ	
High vibr organ3	5/24/89	6:31	am	from COMBOS00.C2V	keyboard	Mah	
High vibr organ4	5/24/89	6:32	am	from COMBOS00.C2V	keyboard	organ	
Lambda PercBrass	5/25/89	10:15	am	FLP1-12	brass	percus	
Lambda PercString	5/25/89	10:15	am	FLP1-11	strings	percus	
Le Test patch #2	6/ 2/89	10:41	am	C'est un full comment.	keyboard	percus	
Moog Bass	5/25/89	10:15	am	FLP1-4	synth	bass	
MoogBass M/Organ	5/26/89	3:40	pm	Implant	synth	bass	
Wice Syn Sheep	5/25/89	10:15	am	FLP1-14	synth	sheep	
Noise Organ	11/ 5/89	6:46	pm		keyboard	organ	
Perc organ	5/24/89	6:32	am	from COMBOS00.C2V	keyboard	organ	

The LIBRARY Window

The order in which Patches are listed depends on the status of the two switches labeled **Sort by Name** and **Sort by Date** in the **Library** menu. **Sort By Date** is especially handy during a Patch editing session, since it allows you to keep track of the versions of the sound you're working on, in chronological order. When selecting sounds for use in a Performance, **Sort by Name** is probably a better choice. If **Show Some**, also in the **Library** menu, is checked, then only those Patches found in the last Find operation will be displayed; otherwise, all Patches in the Library are listed.

A Library may be closed by clicking on either **Close Library**, in the **Library** menu, or on the close button in the upper left corner of the **LIBRARY** window itself.

## Storing Patches in the Libraries

The Patch that is highlighted in the Performance window may be stored in the Library either by dragging it from the Performance to the Library (anywhere in the LIBRARY window), or by selecting the Patch->Library item in the Library menu. In either case, the LIBRARY PATCH INFORMATION window (described on the next page) will appear, and after you click on OK, the Patch will be added to the Library and directory files. Once again, the proper disk must be in your floppy drive if you are using floppy disks for Patch storage.

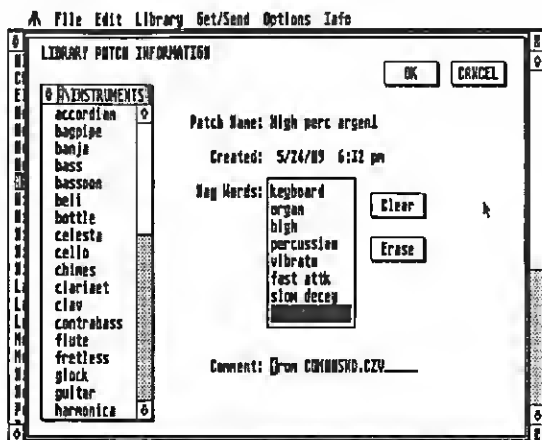
Patches may be copied from a Bank to the Library by dragging the Patch name from the Bank to the Library. The settings of the three Drag to switches in the Edit menu have no effect on this operation.

## Library Duplicate Checking

Whenever you save a patch in the Library, X-oR does two checks. First, it checks to see if a patch with the same name already exists. If it does, it then compares the data for the two patches. If they are exact duplicates, you will be notified, and you will not be allowed to save the patch. When the names are the same, but the data doesn't match, you may choose to replace the existing patch (Replace), add a new entry (Add), or Cancel. If in doubt, add the patch--you can always decide to delete it later. Having no restrictions on duplicate Patch names in the Library makes it easy to work on and save many versions of essentially the same Patch, using comments or keywords to differentiate them.

## Editing Patch Information

All of the additional information associated with a Patch, such as its name, time of creation, keyword list, and a short comment, may be displayed and/or edited in the **LIBRARY PATCH INFORMATION** window, shown below. This window appears when you store a Patch in a Library, when you click on the currently selected Patch in the Library, or after clicking on **Show Patch Info** in the **Library** menu.



The LIBRARY PATCH INFORMATION Window

The editable fields in this window are the Patch name, the comment, and a list of up to eight keywords. New keywords may be "attached" to a Patch by selecting a keyword from the **KEYWORDS** window. The keywords are divided into groups, much as files in the ST's disks are grouped into folders. The **KEYWORDS** window initially contains a list of these groups; clicking on any keyword group name brings up a list of keywords in that group, any of which may then be added to the keyword list simply by clicking on it. The **Erase** button will erase the currently highlighted keyword from the list, and **Clear** erases the entire list. Existing keywords may be replaced by clicking on the offending keyword, and selecting a new one.

## Editing Patch Information (continued)

The comment field gives you a place to write something about the Patch that can't be expressed using keywords. The comment is edited in the same way that all text areas are in X-oR. Note that these comments are not related or connected to the comments saved with Individual Patch files, which are created with the **Comments** menu item.

As was mentioned earlier, the keywords are perhaps the most important feature of the librarian, because of their use by the Find command (described in the next section). If you have a large Library of sounds, you might think that the amount of time needed to assign keywords to all of your sounds is prohibitive, but take it from us--the long-term payback on your time investment will result in substantial savings in the future (hmm...sounds more like a Banker than a Librarian). We suggest that, when you first add a Patch to a Library, you get in the habit of assigning one or two keywords--probably one from the **CATEGORIES** group and one from the **INSTRUMENTS** group. However, don't go overboard on assigning subjective descriptions of a sound's qualities to a patch. It's more important that you use keywords in a consistent manner (which may mean using fewer keywords) than it is to come up with a unique way of describing each Patch.

Note that the creation time and date listed for the Patch will not be correct if your ST's clock is not set correctly! We suggest the use of a battery-backed clock, to eliminate such worries.

## Library Keyword Tips

Programming too many keywords per patch without a great deal of advance planning inexorably (pun intended) leads to a poorly organized Library. The last thing you want to do is to reprogram the keywords in your Library!

We've found that a good way to approach keywords is on an as-needed basis; that is, program just one or two keywords per Patch until your Library becomes so big that a particular search results in too many patches. Then, using **Show Some**, go through the offending list of patches and add one more keyword category to each patch.

The keywords are intended to be used to help you *find* a patch you are looking for, while the comment should be used to help you *recognize* a particular patch when you see it in a list. This is an important distinction—the keywords should not be too distinctive, since this defeats their purpose. Until your Library is big enough to need them, any extra descriptive comments should be put in the comment field.

### **Moving Banks to the Libraries**

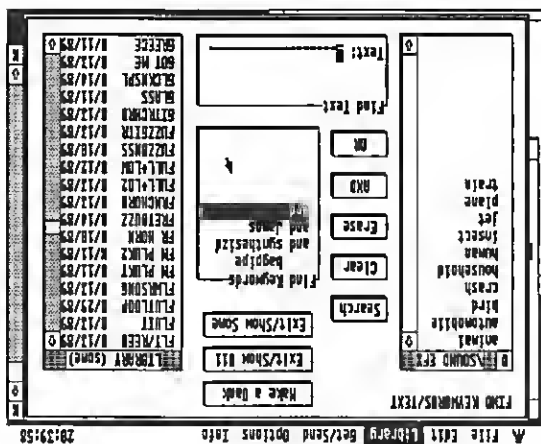
In the spirit of the times, your patches are free to emigrate en masse from Bank file to Library, attaching a common comment or keyword as they cross the border, if you wish. For example, we find it handy to put the Bank file name in the comment. The only restriction is that the Library will not accept duplicates (duplicate names are okay, but no exact clones). The operation of this command should be pretty self-explanatory. We recommend programming the keywords individually to take advantage of the keyword search feature, but with **Bank->Library**, you can save that task for a rainy day, while you enjoy some of the benefits of X-oR's Libraries.

### **Deleting a Library Patch**

The currently selected Library Patch may be deleted from the Library by clicking on **Delete Patch**, in the **Library** menu. An alert box will confirm this choice before the Patch is deleted.

## Searching the Libraries

The Find option in the Library menu is used to search the current Library for all of the Patches that meet certain specifications. After you click on Find, the following window will appear:



The Find Window

The FIND KEYWORDS/TEXT window lets you search a Library for Patches that match a set of specified keywords, or for Patches whose name or comments contain a specified text string.

Keywords are added to and removed from the **Find Keywords** box using the **KEYWORDS** window and the **Clear** and **Erase** buttons, just as in the **LIBRARY PATCH INFORMATION** window. In addition, two buttons labeled **AND** and **OR** are used to set logical constraints on how multiple keywords work together. All of the keywords in the list, except the first, are preceded by either **and** or **or**. If **and** appears between two keywords, X-oR only finds Patches that have both keywords; if **or** appears, it will find Patches that use either keyword. Keywords that are separated by the **or** statement are evaluated together by X-oR when it searches for matching keywords—if any keyword in an "ord" group is found in a Patch, then X-oR immediately skips to the next **and** keyword. For example, suppose you set up the following keyword list:

```
        keyboard
and    soothing
or     pleasant
or     smooth
and    acoustic
```

In this case, X-oR will find any acoustic keyboard Patches that are either pleasant, soothing, or smooth. If, on the other hand, the keyword list read like this:

```
        keyboard
and    soothing
or     pleasant
and    acoustic
or     smooth
```

then X-oR would search for keyboard sounds that are soothing or pleasant, as well as acoustic or smooth.

## Searching the Libraries (continued)

If you wish to search for a Patch whose name or comments contain a particular word, enter the text string in the field labeled Text. The case of the text string does not need to match the text you're searching for, and it needn't be a complete word; for example, entering "ell" will find the Patches "Bell", "SHELLS", etc. The text string is "anded" with the keyword list, so if you don't want to search for a particular text string, you must first clear this field with the <Esc> key before executing the search. If you want to search for text only, use the **Clear** button to clear all keywords before doing the search.

Once the search criteria are defined, clicking on **Search** will cause a list of the Patches that meet your requirements to appear in the **LIBRARY** window. You may change the "rule" and search as many times as needed.

There are three ways to exit the dialog box. To create a Bank consisting of the "found" Patches, click on the **Make a Bank** button (the current Module must have a Bank file format for this to work). The number of patches is limited to the standard bank size, and the more patches there are, the longer it takes to create the bank. If you choose **Exit/Show Some**, the **Show Some** switch in the **Library** menu is turned on, and the **LIBRARY** window will display only the "found" Patches, making it easy to audition them. **Exit/Show All** exits with the **Show Some** switch turned off.

Note that patches listed in the **FIND KEYWORDS/TEXT** dialog are sorted by name or date, according to the setting of the switches in the **Library** menu, just as they are in the main **LIBRARY** window.



## Editing the Keyword List

X-oR's keywords are contained in a file named KEYWORDS.TXT, which can be edited with any word processor that saves ASCII (unformatted) text files. If you feel that the keywords that we've provided just don't go far enough, you may modify the keyword file to meet your needs. However, there are a few guidelines that must be followed when editing KEYWORDS.TXT, in order for the new file to make sense to X-oR.

First of all, keywords should be no longer than twelve characters, and must end with a carriage return—that is, each keyword must be on its own line. Group heading names are identified by a backslash <\> before the name—for example, \SOUND EFX. (This is not counted in the twelve character limit.)

Most important, X-oR identifies keywords by their group number and their position within each group, not by their text. This means that if you add keywords to a group, they must be added to the end of the group, rather than inserted in the middle. Similarly, if you add a new group to the list, it should be tacked on at the end. If this rule is not followed, most or all of the keywords assigned to each Patch in any existing Libraries will become meaningless. (Of course, if you haven't created any Libraries yet, you can change the keywords in any way you wish.) Keywords may be replaced with synonyms ("fiddle" instead of "violin", for instance) if you are so inclined. Each group may contain no more than 256 keywords, and the maximum number of groups is 255.

## Editing the Keyword List (continued)

Although you can add an awful lot of keywords to the list, we urge you not go overboard with this, especially in the area of subjective descriptions of quality ("soft", "sappy", etc.). Keep it simple--and avoid all synonyms! A good keyword category addition would be "Programmer," or "Project". Your additional keywords might be technical details on the Patch (mode, algorithm or waveshapes used, etc.), or any instrument types we may have neglected to put in the keyword list.

It goes without saying that, to ensure complete security, you should make a backup copy of KEYWORDS.TXT before you start to edit it.

## Library Applications

If you're been using the Caged Artist editor/librarians, you're probably in the habit of storing your Patches in Banks, and then loading individual Banks and pulling Patches from them as needed. This way of working is now as outdated as the buggy whip, thanks to the Libraries. We suggest that one of the first things you do with X-oR is to copy ALL of your Patches into Libraries (using Bank->Library), and get in the habit of using them regularly.

The Libraries offer a faster and more powerful alternative to single Patch files. Library storage is both more efficient, and faster than single Patch storage. When you've got a Patch that you want to save, just select the Patch->Library command to store it in the Library. There's no need to type in a file name, and there's no worry about accidentally erasing a previous version.

The Libraries are also a good place to store intermediate versions of Patches as they are being created. Because Patches in the Library can be sorted by time of creation (with the most recent displayed first), it's easy to find the most recent version of the Patch that you've saved, or the one before that, even if you don't give them different names when they are saved. When you're done, you can go through the list and delete the bad sounds, and give slightly different names or comments to the various good Patches, along with appropriate keywords.

## Library Techno- details

Each Library is made up of two files: a Library file, which ends in a .LIB extension and contains the actual Patch data, and a directory file, which ends in .DIR and contains the additional information on each Patch, such as keywords, comments, etc. Both of these files should be in the data storage folder specified for the instrument in the setup program. (You normally won't need to worry about this, since X-oR automatically places these files in the correct folder when they are created.) If you move these files for any reason, be sure to move both of them together.

Libraries are automatically shared between all compatible Data Types (compatibility is determined by the Profile). Therefore, as a general rule, you should only have one Library per Data Type. If you are using a hard disk, there should be no problem. However, if you are using floppy disks, you may need to create multiple Libraries, due to disk size limitations. In this case, you should be very careful to **NEVER CHANGE DISKS** when the Library is open, since this could theoretically cause your Library to become garbled. (Actually, X-oR uses a Library protection scheme which practically eliminates catastrophic Library errors, but Murphy says that it will happen to someone, someday; hence this warning. In most cases, an error message will occur.)

X-oR expects to find the Library for each Module in the folder where that Instrument's Bank files reside. If you change this folder using the file selector, X-oR will be unable to locate the Library. In this case, just use the **Locate** option to put things back the way they belong.

The number of patches in a Library is limited to 32,768 (try to contain yourself)! Directory entries currently use about 80 bytes each (although this may be programmable in the future), plus patch data, so if your Library directory file reaches 2.6 megabytes or so, it may be time to clean out the less useful patches.

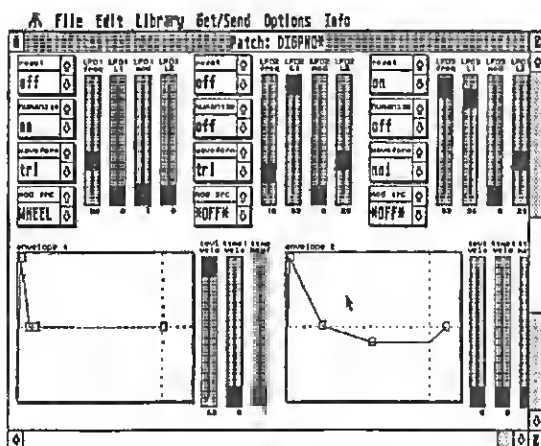
## Chapter 8

### Patch Editing

X-oR contains a complete, full-featured patch editor for nearly every device it supports. Each Profile contains the necessary information: parameter names, ranges, etc. X-oR uses sliders, envelope graphs, and text-based objects to edit individual parameters. Also included is an arsenal of tools that generate Patches through various algorithms such as combination and randomization, and tools to edit Patches on a larger scale. In this chapter, we'll cover all aspects of editing Patches in X-oR.

### Opening a Patch Edit Window

Patch editing is done in a special window called the Patch Edit window. To open a Patch Edit window for a specific Module, first select that Module in the Performance window, then pull down the Edit menu and click on Patch Edit window. (Pressing <Control-E> will also open a Patch Edit window for the currently selected Module.) Once this is done, a window similar to that shown below will appear.



ESQ-1 Patch Edit Window

## The Patch Edit Window

Each Patch Edit window consists of the standard GEM window elements (move bar, resize button, etc.) along with three special types of data entry devices, which we call "Parameter Objects." Sliders are used to edit continuously variable parameters (usually numeric parameters), text boxes are used to choose a parameter value by name from a list, and envelope graphs are used for the graphic display and editing of envelope generator (EG) parameters. Depending on the specific details of the machine and the design of the Profile, any or all of these elements may be present for any particular Module.

The full button, which is a standard component in most GEM windows (including those in X-oR), is especially helpful in the Patch Edit window, because it lets you see a much larger section of the Patch than the default window does. Click on the icon in the upper right corner of the window to make the window fill the entire screen, or to shrink it to its original size.

In some Modules (especially effects devices), changing a parameter may cause major changes in the layout of the Patch edit window itself. The parameter in question is usually a mode or algorithm of some sort; and the change in layout reflects changes within the actual Instrument. Some Profiles may also contain objects (either sliders or text boxes) that are used to switch between multiple, *identical* sections within a Patch--for example, partials in a Roland L/A synth, or program numbers in a program map. In this case, changing the setting may change some of the values shown, without changing the layout of the display.

## Sliders

Each slider in a Patch edit window consists of a slider icon, a label for the slider at the top, and the current value of the slider at the bottom. The value display is somewhat limited, and doesn't always coincide with the display used in the Machine. In most cases, the numbers will be the same, but in some instances, they will not match up. For example, in the DSP-128, one algorithm has 261 different delay times spread over 1800 ms., with varying increments in different ranges. In X-OR, the only way to accurately show such a parameter is with a text box, but text for the 261 delay times would waste a great deal of memory. In this case, a slider was decided to be a better method of entry for the delay time, so the delay times must be shown as a number from 1 to 261.

Because of the length of the sliders, it is not always possible to obtain the vertical resolution needed to adjust some parameters with full precision. In this case, you can fine tune the slider setting by clicking above or below the slider handle (but inside the slider box), which raises or lowers the value by one.

If a Machine is capable of handling parameter changes at a reasonably high speed, the Machine will be updated as soon as the parameter value changes (i.e. MIDI data will be continually sent as you move the slider). With slower Machines, the change will only be sent when the mouse button is released. This function is controlled by a switch in the Profile (one for each Data Type).

## Text Boxes

Parameters that are better displayed in text format (such as LFO or oscillator waveshapes, modulation sources or destinations, etc.) are handled in X-oR with an object we call a text box. Each text box contains a label or name, two arrows for incrementing and decrementing the parameter, and a text field that shows the current setting of that parameter. As you may have guessed, clicking on either arrow changes the setting in the text box.

If you click anywhere else on the text box, such as on the label or the selection itself, a pop-up *parameter select window* will list the available options. A parameter change message, or in some cases the entire Patch, will be sent to the instrument as soon as you select an item in this window. To leave the window, click twice on the same item, click outside the window, or press any key.

## Envelope Graphs

The envelope graphs allow you to both view and edit each of a Module's envelopes. The small square boxes in each envelope represent the movable points of that envelope, which may be edited by dragging these boxes around the display. The Profile for each Module knows the limits for each of these points, so that it is impossible for you to move any envelope point to a location that doesn't correspond to a valid envelope setting in the Module. In fact, the quickest way to learn about the possible shapes that can be created with any particular envelope generator is to just grab each point in the envelope and yank it every which way. Some envelope graphs may also have a horizontal dotted line through the middle of the display, which indicates that the envelope can produce both positive and negative values (the dotted line usually represents zero).



One important point about the envelope graphs is that they are not "to scale"; that is, the actual envelope times are not proportional to the length of each segment in the graph. In some instruments, slight changes in an envelope point may make huge changes in the envelope time or level, especially in the upper end of most time ranges. The graphs will tell you a lot about the shape of an envelope, but you should always rely on your ears for fine-tuning envelope settings.

Most envelopes can also be affected by other parameters that aren't easily represented in the envelope graph. These parameters affect such things as the modulation of envelope levels or times by key number and/or velocity, the overall envelope level, etc. These functions will vary from one Module to the next, but the Profiles will normally place relevant parameters near the envelope graphs, for easy identification.

## **Storing Edited Patches**

When a Patch has been edited, a check mark will appear beside its name in the **Performance** window, and an asterisk will appear beside its name in the **Patch Edit** window. These will disappear when the Patch is stored in a Bank, when it is saved to disk, or when a new Patch is selected.

Patches may be stored in a Bank by dragging the Patch name from the Performance to a Bank window, or by using the **Update Bank Patch** command (discussed on page 49). Patches may be stored in Libraries either by dragging the Patch name from the Performance window to the **LIBRARY** window, or with the **Patch->Library** menu item, as explained in the previous chapter. Remember that when a Patch is stored in a Bank, it is not automatically saved to disk, unlike Patches that are stored in a Library.

## **Patch Name and Comments**

The name of the Patch in the **Patch Edit** window may be edited by selecting **Name Patch** from the **Edit** menu, or by clicking briefly on the current Module in the **Performance** window. A dialog box will appear, where you may edit the existing name, or enter a new name.

When the **Patch Edit** window is on top, the **Comments** option, also found in the **Edit** menu, lets you enter a set of comments that will be saved with the Patch if it is stored separately to disk, as described later in this chapter. Note that these comments are not included with the Patch when it is stored in a Bank or Library.

## **Getting and Sending Patches**

Individual Patches may be transferred to or from your MIDI system with **Get Patch** and **Send Patch**, in the **Get/Send** menu. When **Get Patch** is chosen, X-oR switches in the Instrument (or asks you to do it manually), sends a system exclusive request message for the current Module, and waits for an answer. If the MIDI data that comes back is garbled, or if no data is received, an alert box will tell you what has happened, and allow you to try again or to terminate the operation.

**Send Patch** sends the current Patch to the MIDI system. Because Patches are sent to the system each time they are edited or selected, there is rarely any reason to use the **Send Patch** option.

## **Loading and Saving Patches**

Patches can be individually loaded and saved to disk, using the **Load Patch** and **Save Patch As...** items in the **File** menu. Clicking on either will bring up a file select box, which allows you to specify the file name to load or save.

Under most circumstances, you probably won't be using individual Patch files, since the best way to organize a collection of Patches is in a Library. Patch files are included to ensure compatibility with earlier Caged Artist editors, many of which allow Individual Patches to be saved, and to allow you to store Patches which require longer comments than those permitted in the Libraries. You might use these options to keep Individual backup copies of some special Patches.

## Initializing Patches

If you like to create your patches from scratch, this command is for you. Most X-oR Profiles include a patch Initialization routine which makes a generic patch with parameters set to nominal values. If the Profile doesn't include this routine, the initialized patch will generally consist of zero or minimum value for all parameters.

## Transplanting Sections

X-oR has a special editing function that allows you to copy entire sections of a Patch from one Patch to another (or within the same Patch). This operation, which we call *transplanting*, is found in the Edit menu under the names **Transplant->Patch**, **Transplant->Bank**, and **Copy Section**. The precise transplant capabilities of any particular Machine will depend on both the design of the Machine itself, and the Profile.

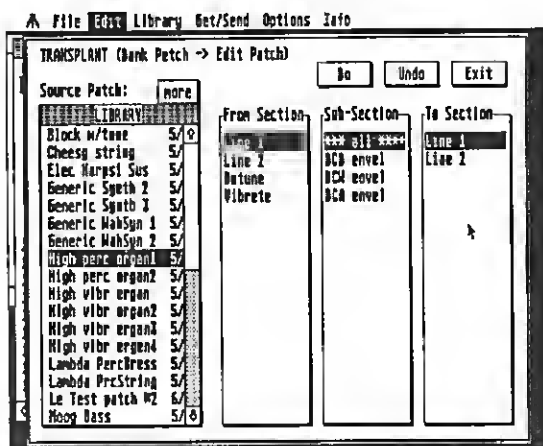
**Transplant->Patch** is used to copy one or more sections from a Patch in a Bank or Library to the current Module's Patch, and is most useful for creating new Patches by combining sections of different Patches. This option only works when at least one Bank, or the Library, is open.

## Transplanting Sections (continued)

**Transplant->Bank** copies sections of the current Module's Patch to every Patch in a specified Bank. A new Bank is created. **Transplant->Bank** is handy if you want to copy certain performance-related parameters (such as pitch bend range, DX-7 function parameters, etc.) to all the Patches in a Bank, though it can also be useful for creating new Patches (more or less randomly) on some instruments. At least one Bank must be open before **Transplant->Bank** will work; it doesn't operate on the Library.

**Copy Section** is used to copy sections of a Patch within the current Module's Patch, and is therefore useful for duplicating envelopes, modulation routings, partials, etc. **Copy Section** is available at all times.

After clicking on any of these items, a dialog box much like that shown below will appear.



Transplant->Patch for CZ-101

The window in the left half of this screen lists the Patches available in the Bank or Library. When **Transplant->Patch** is selected, this window allows you to select the source Patch (or "donor", if you will) for the transplant. The **more** button allows you to cycle through all the open Banks, as well as the Library, if that is open. When **Transplant->Bank** is used, the **more** button is used to select a Bank to be copied to, but the window is otherwise not used. (The Library is not a possible destination.) This window does not appear at all when **Copy Section** is selected.

Three boxes labeled **From**, **Sub-Section**, and **To** determine the section of the Patch that will be transplanted. The contents of the **From** box will vary from one Module to the next, and the contents of the other two will change depending on the item selected under **From**. If the instrument's Profile knows how to break the selected section down into smaller chunks (for example, sections of a partial in the D-110 editor, as shown above), then the **Sub-Section** box will list them. Finally, the **To** box lists all of the Instrument's sections that are identical in structure to that chosen in the **From** box—for example, all envelopes if **Envelope 1** is selected, or all LFOs if **LFO 3** is chosen.

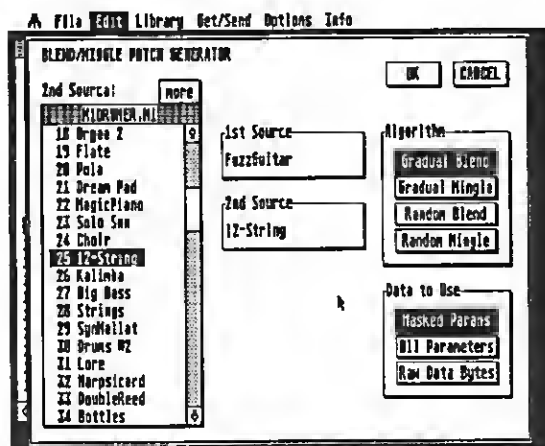
In the **Transplant->Patch** and **Copy Section** windows, the transplant operation specified by the **From**, **Sub-Section**, and **To** boxes is executed each time you click on the **Do** button. The new Patch is sent to the Instrument after each transplant is completed. You can do multiple transplants in a single session in this window by changing the source and destination sections between each click on the **Do** button. Use the **Undo** button, if necessary, to undo only the most recent transplant operation. When you're done transplanting, click on **Exit** to leave the window.

In the **Transplant->Bank** dialog, only a single transplant operation can occur each time the command is chosen. After you click on **OK**, the new Bank will be created, and the dialog box will disappear.

If a particular Profile Data Type does not support Banks, the **Transplant->Bank** option will not be available for Modules of that Data Type.

## Blend/ Mingle

The **Blend/Mingle** item, in the **Edit** menu, is used to create a new Bank of Patches by combining different aspects of two existing Patches. After you click on this item, the following dialog box will appear:



Blend/Mingle for M-1

**Blend/Mingle** always combines parameters from the current Module's Patch (the **1st Source**) with another Patch that may be selected from any open Bank or the Library (the **2nd Source**). As with the **Transplant** functions, you may step through the open Banks and the Library by clicking on the **more** button. The resulting Patches are placed in a new Bank, which will be generated when you click on **OK**.

Four different means of combining the Patch parameters may be selected in the Algorithm box. The two Blend algorithms create new parameter values by averaging the two corresponding parameter values from the two Patches, while the **Mingle** algorithms simply copy parameters from both Patches. The **Gradual Blend** algorithm interpolates smoothly between the parameters of the two Patches. The first Patch in the new Bank will be very similar to the **1st Source**, and the last Patch will be more like the **2nd Source**. **Random Blend**, on the other hand, will randomly select and blend parameters from the two Patches. Given the same two source Patches, **Gradual Blend** always produces the same Bank, but **Random Blend** will produce a different set each time.

**Gradual Mingle** produces a gradual progression from the **1st Source** to the **2nd Source**. The chance that any parameter will be copied increases gradually as the Bank is filled with new Patches. The first Patch in the Bank is identical to the **1st Source**, and the last Patch is closer to the **2nd Source**, but since individual parameters are chosen at random, a different Bank of sounds will be produced each time you use this algorithm. **Random Mingle** chooses parameters from both sources totally at random, with each source having a 50% chance of being selected.

## Blend/ Mingle (continued)

The buttons labeled **Data to Use** determine what parameters will be blended or mingled. The **Raw Data Bytes** method simply treats each individual byte that makes up the Patch as a separate number when blending or mingling. This is a fairly crude way to perform this operation, and can even be risky for some Machines, since it is possible to create data values that have no meaning to the synthesizer. However, it can result in some very interesting sounds, especially on Machines in which each parameter is stored in a separate byte, such as the DX-7 and the D-110. If **All Parameters** is selected, on the other hand, X-oR first converts the raw data into the individual instrument parameters (just as it does when you edit a Patch in the **Patch Edit** window), and then blends or mingles the resulting data. Depending on the instrument, this may result in more interesting and useful sounds than the **Raw Data Bytes** method, and is not prone to problems caused by bad data values. If **Masked Parms** is chosen, only those parameters that have been selected for randomization in the **Randomize w/Mask** window (described in the next section) are affected; the other parameters are always copied from the **1st Source**. **Masked Parms** is especially effective if there are certain aspects of the **1st Source** Patch that you would like to retain, for example, a waveshape selection, or oscillator fine tuning. The names of the two Patches to be blended or mingled are always combined using the raw data bytes in the Patch, since this results in very interesting names for the new Patches.

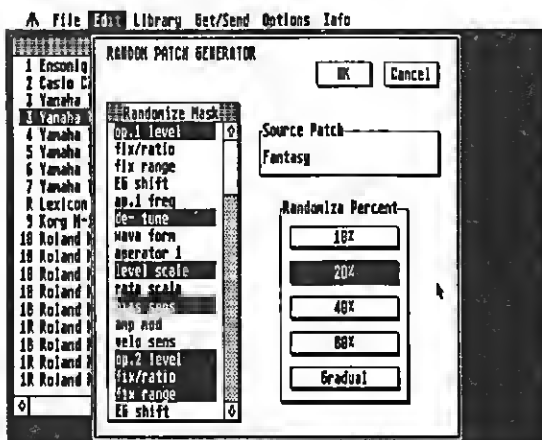


When blending or mingling, the Library is often the best source for the **2nd Source**, especially if you have used keywords that tell you something about the parameters used in the Patch. For example, suppose that your DX-7 Patches all have a keyword or comment that describes the algorithm used. In this case, you could use **Find** followed by **Show Some** to limit the Library display to only those Patches that use a particular algorithm, and then use one of those as your **2nd Source**. Patches created with this kind of care have a much better chance of being useful.

You may sometimes find that a Bank is generated in which the sound never approaches that of the **2nd Source**. Unless you use **Raw Data Bytes**, only the parameters shown in the **Patch Edit** window are eligible for blending or mingling. Therefore, some Profiles aren't able to fully blend or mingle Patches without using **Raw Data Bytes**.

## Randomize w/Mask

This command, found in the **Edit** menu, creates a new Bank of Patches by randomizing certain selected parameters. After you click on **Randomize w/Mask**, the following dialog box will appear:



Randomize w/Mask for TX-81Z

The **Source Patch** is the current Patch, and cannot be changed. The parameters available for randomization are shown in the **Randomize Mask** box. Any parameter that is highlighted will be randomized when you click on **OK**. Each Profile contains a default mask, which allows you to randomize only those parameters that we feel are best suited to randomization; however, you can change these settings freely if you'd like.

The buttons at the bottom of this window set the amount of randomization. If **Gradual** is selected, then the lower-numbered Patches in the Bank will have a low percentage of randomization, and the higher-numbered Patches will be more randomized.

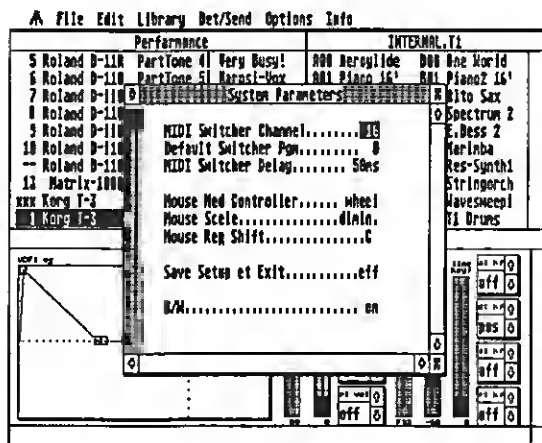
## Chapter 9

### System Parameters

The Options menu and the System Parameters window (which is accessed via the Options menu), contain parameters that influence the operation of X-oR in a global sense (i.e. they apply to all Modules and all Instruments). These include settings for your MIDI switcher, the Mouse Play and MIDI Merge features (both described in Chapter 4), the screen colors, and other options. These parameters may be saved to disk in a configuration file (XOR.CFG), which is loaded when you first boot X-oR.

### The System Parameters Window

The System Parameters window is opened by choosing System Parameters in the Options menu. This window contains Global parameters which either wouldn't fit in the Options menu, or which aren't the type of parameter one would need to change very often.



The System Parameters Window

## **Editing in the System and Setup Windows**

Most parameters in the **System Parameters** window (and **Instrument Setup** window) can be edited in several ways. First, select the parameter to be edited by clicking on its value, which is then highlighted. Then, use either the slider, the numeric keys, and/or the <+> and <-> keys to enter the value. There is a shortcut for "grabbing" the slider: just click on a parameter (or any neutral place in the window) and drag the mouse past the current vertical position of the slider to grab it.

## **MIDI Switcher Parameters**

### **MIDI Switcher Channel**

This is the channel on which your MIDI switcher/patcher receives program changes. If this is set to **off**, X-oR will assume that you don't have a switcher, and will issue a message telling you to repatch your system as necessary before it attempts to get information from any Machine.

### **Default Switcher Pgm**

This is the switcher program that you normally use either for sequencing or keyboard playing. It must connect the ST's MIDI output to the MIDI inputs of all Machines that you intend to edit with X-oR.

### **MIDI Switcher Delay**

This is the amount of time, in milliseconds, that X-oR will wait between sending a program change message to your MIDI switcher, and sending any system exclusive data. If you're not sure how long your MIDI switcher needs to settle after receiving a program change message, set this to zero, and then increase it if any of your instruments have problems with "Get" commands.

## Changing Colors

### B/W Colors

If you're running X-oR with a color monitor, you may want to define your own color scheme. Using the **Colors** parameters, you can adjust the proportions of red, green, and blue in each of the four colors used by X-oR. In monochrome, the **B/W** switch lets you select black letters on a white background, or vice versa.

If you use the Atari **Control Panel** desk accessory, it will force its own color scheme on you and lock ours out, so we suggest you avoid its use when you're using X-oR—unless you really *like* radioactive green.

## Automatic Setup Save

**Save Setup at Exit** causes X-oR to automatically save changes to the Instrument Setup whenever you exit X-oR, (including **To KCS** in the **MPE**). This saves all of your channel assignments, and the names of the last bank downloaded to each instrument (the **Internal Bank**). The next time you boot, X-oR will have valuable, up-to-date information about your setup. You should definitely take advantage of this feature if you have a hard drive. If not, you'll have to make sure your boot disk is in the floppy drive when you exit.

## Saving X-oR's Default Options

The settings in the **Options** menu, the **System Parameters** window, and the **Instrument Setup** window are all saved to disk by the **Save Default Options** command in the **Options** menu. This command saves X-oR's system parameters in a file called **XOR.CFG**, and the current **Instrument Setup** in a file called **XOR.SET**. Both are automatically loaded when the program boots. **XOR.CFG** also contains the location and size of each window on the screen, so you should move them to your favorite positions before selecting **Save Default Options**.

Why are you reading this blank page?

## Chapter 10

### Instrument Setups

The Instrument Setup tells X-oR what instruments you have in your setup (i.e. what Profile to use), how these instruments are connected to the computer (MIDI channel, switcher connections, etc.), and some of your preferences about how X-oR should interact with each instrument. The X-oR setup (XOR.SET) file contains all this information, which is loaded when you start X-oR.

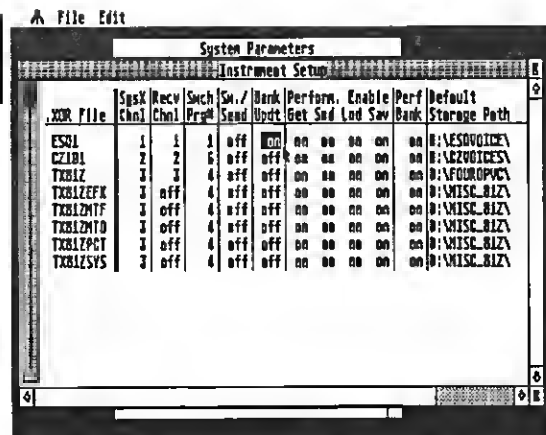
This chapter explains how setups are created and edited, and what the Instrument Setup parameters each do.

### Using the Setup Editor

X-oR only needs to know one thing about your MIDI setup before you start the program; namely, what instruments you are using. Instruments can only be added to or deleted from the setup by X-oR's separate Setup Editor (ED\_SETUP.PRG). Everything else in the Instrument Setup can be edited from within X-oR. As with Profiles and the Profile Editor (E-oR), the Instrument Setup is established outside of X-oR to eliminate extra clutter, confusion and program overhead.

As of this writing, the Setup Editor can only be executed from the Desktop, and not the MPE. After you double click on the ED\_SETUP.PRG icon, the following screen will appear:

## Using the Setup Editor (continued)



The Instrument Setup Window

This window is the **Instrument Setup** window, which forms the heart of the Setup Editor. Each line contains the specifications for a single instrument. Instruments are added and removed from the list with items in the **Edit** menu. A similar window is used within X-oR itself for editing the Instrument Setup during X-oR operations.

**The File Menu** | The Setup Editor's **File** menu contains items for loading, saving, and creating setup files. When you select either **Save** or **Save As...**, the setup information will be saved in a file with the appropriate name (always with the .SET extension), and the system parameters will be saved in a file named XOR.CFG. Note that we do allow you to save the setup file under a different name, although X-oR always uses the one called XOR.SET. You could rename files outside of X-oR if, for whatever reason, you have two different setups that you use with one computer.



**The Edit Menu** | The Edit menu contains items for editing the Instrument list, as well as the bootup comments. These commands are only found in the Setup Editor. The line on which a parameter is highlighted (we'll call it the "current line") is important to several of these operations, and can be changed with the up and down cursor keys.

**Add Instrument** attaches an Instrument specification to the end of the Instrument list.

**Insert Instrument** Inserts an Instrument at the current line. The last Instrument deleted (if any) will be inserted. This is one way to make a copy (Delete, Insert, Insert), or to undo a Delete Instrument command. If no Instrument has been deleted, a blank Instrument will be inserted.

**Delete Instrument** deletes the Instrument on the current line. You can move an Instrument by deleting it, then inserting it elsewhere.

**Boot-up Comments** is used to edit the file BOOTUP.TXT, which contains the comments that X-oR displays at the beginning of a session. This file can also be edited with an external text editor, if you'd prefer using real word processing software.

## **Choosing a Profile**

| The .XOR File column shows the name of the Profile used for each Instrument. A different Profile may be chosen by clicking on the current Profile name, after which a file selector will allow you to select a Profile. Click on OK to copy the Profile name into the Setup.

## **Default Storage Path**

The **Default Storage Path** is the drive and folder used to store data files (Patches, Banks, Libraries) for an Instrument. Primarily a convenience feature, it keeps you from having to deal with the file selector as much. It's also used to find Bank files during a **Load Performance** command. When working with a hard drive, we suggest that you create a separate folder for each Instrument in your system (except for duplicates, which probably should share a folder). The **Default Storage Path** is changed by clicking on the Instrument's current path (this should be "A:\\" for blank Instruments), and then choosing the folder with the file selector, as if you were going to open a file from that folder (to be able to do this, you must have already created the folder outside of the Setup Editor). Click on **OK** to copy the folder name into the setup.

From within X-oR, an Instrument's default storage path is updated whenever you open or save any data file for the Instrument. Therefore, once you've successfully loaded or saved a file, use the **Save Default Options** command to make the change permanent.

## **Instrument Setup Parameters**

The **Setup** parameters listed here are common to both the Setup Editor and X-oR. They are edited by the techniques discussed in the Chapter 9.

### **SysX Chnl**

This is the Machine's basic MIDI channel, system exclusive channel, unit I.D., Instrument number, or whatever the manufacturer has chosen to call it. The value can range from 1 to 128. Remember that MIDI channels may only range from 1 to 16, and that many Machines may also permit fewer than 128 distinct units. You should also be aware that some folks number their units starting with 0, rather than 1, so you'll need to mentally subtract one from the value here to match that on your Machine's display. For example, the Emu Proteus can be set to any unit number between 0 and 15, which corresponds to 1 to 16 in this field.

It is possible for X-oR to treat two Machines of the same model as two separate devices, as long as the **SysX Chnl** for each is different, and if the Machine actually supports multiple units. (The Alesis HR-16, Oberheim Matrix-6, and early DX-7's, for example, do not.) You can also treat two identical Machines separately, even if they share a single unit number, if they are set up with different switcher programs, which are discussed in the next paragraph, and if **Sw./Send** is set to on.

### **Recv Chnl**

This is the channel on which the Instrument receives MIDI note, controller, and program change messages. However, this **Recv Chnl** only comes into play when a Instrument receives these messages on a channel other than the **SysX Chnl**, and only if this channel is not programmable via MIDI. For example, if a Module's receive channel is programmable via MIDI, and the X-oR Profile is smart enough to know this, it may take complete control over the Receive Channel, setting it according to the Patch data (In X-oR, any module may control the receive channel of any other module within the same Instrument).

## **Instrument Setup Parameters (continued)**

When you change the **Recv Chnl** in X-oR, you will see the **Module Receive Channel** in the **Performance** window change for Modules that are affected. If the **Recv Chnl** is set to "--", the **Receive Channel** is in a neutral state (no channel is specified).

The **Recv Chnl** settings directly affect the **Mouse Channel**, which is used in X-oR's **Mouse Play** and **Merge** features. For more on the **Mouse Channel**, see Chapter 4.

### **Swch Prg#**

This is the program in your MIDI switcher that connects the specified Machine to the computer's MIDI input. If you aren't using a switcher, or if you don't have a program that will connect a particular Machine to the ST's MIDI In, set this to **off**, and X-oR will issue a prompt telling you to repatch when it needs to get data from a new Machine. See Appendix 2 for more on how to set up a switcher.

### **Sw./Send**

This parameter, which is an abbreviation for "Switch to Send", tells X-oR that the Instrument's switcher program must be selected each time data is sent to it. Normally, X-oR only calls up this program when getting data from the Instrument. However, if you have two Machines that are identical, and which don't have a unique system exclusive channel, one of them must be switched out of the system any time you edit the other.

Also, since manufacturers aren't perfect, you may find certain bizarre cases in which one Instrument's data causes another Instrument to complain about an over-stuffed buffer, or it may even crash unceremoniously! Turn **Sw./Send** on for such special cases, but if you don't have any trouble, leave it off. (There are a few Instruments which must be switched to do "hand-shaking" when you send certain data to them, but this is handled by the Profile.)

Another example in which Sw./Send can be useful is when two Machines are hooked together in overflow mode, and the overflow mode neglects to pass System Exclusive data. To correct for this, you'll need to have both master and slave connected to your switcher. Both units are treated as one X-oR Instrument. In the default switcher program, master and slave will be "daisy-chained" together to take advantage of the overflow mode. However, when switched, X-oR sends to both units directly, to ensure that each holds the same data.

#### **Bank Updt**

The **Bank Updt** (Bank Update) parameter enables a feature which automatically transmits any changes to the Internal Bank file. See Chapter 6 for a full explanation of this feature.

## Instrument Setup Parameters (continued)

### Performance Enable Switches

These four buttons, labeled **Get**, **Send**, **Load**, and **Save**, tell X-oR how to treat the Instrument's data when it is dealing with a Performance or all Banks. Normally, each should be set to **on**, but if you don't want a particular Instrument to be included in one of the Performance operations, you can turn it off here. For example, if you have a particular Machine whose output must be manually patched to the ST's Input, and if you hardly ever need to get data from it, you might set **Get** to **off** for each of that Machine's Instruments. If you want an Instrument's Patches to remain unchanged when you load a new Performance, set **Load** to **off**. Because each Patch or Bank is automatically sent as it is loaded, the new Patches for that Instrument will not be sent. For this reason, it is rarely necessary to turn **Send** off. Similarly, we recommend that you always leave **Save** turned on, to ensure that your Performance files will contain all the appropriate data. (You might want to set **Save** to **off** if you have an Instrument that has a particularly large Patch that is rarely changed, in order to save memory.)

### Perf Bank

This parameter (which would be called **Performance Bank Enable** if we could fit it on the screen) controls the saving and loading of banks with Performance file. If **Perf Bank** is **on**, the name of the current Internal Bank will be saved along with a Performance. When the Performance is reloaded, the Internal Bank file will also be loaded and sent to the Instrument. Chapter 6 contains more detailed information.



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## **Chapter 11**

### **X-oR and the MPE**

As good as it is by itself, X-oR really starts to fly when you use it in a multi-tasking system, such as Dr. T's Multi Program Environment (MPE). Multi-tasking systems let you use your computer as the central control panel of your entire system, without resorting to less effective desk accessory programs, or rebooting your computer each time you want to move from the sequencer to the patch editor/librarian. The MPE beats the pants off of basic "switcher" programs, because it gives X-oR full access to sequencer data structures, and lets you play sequences from within X-oR. In this chapter, we'll cover all aspects of using X-oR in the MPE.

### **Memory and the MPE**

One fundamental aspect of all MPE programs is that they steal memory from the MPE host program's sequence storage area, both for program code and data storage. The amount of memory needed by each program is stored in a file with a .INF extension. X-oR uses a file called XOR.INF for this purpose. Most other MPE programs have a fixed amount of memory that is allocated to the program, but because X-oR is intended to be tailored to each MIDI system, we've also given you the ability to alter its .INF file, to allocate just the right amount of memory needed for your application. This way, you can be sure that you have enough memory to load multiple Banks, without wasting valuable KCS data space.

## Memory and the MPE (continued)

The program XOR\_MEM.PRG is used to change X-oR's memory allocation. This program, which can be executed either from the Desktop or as an MPE module, displays the current memory allocation value in terms of Kbytes, and accepts a new value. After you click on OK, it saves the modified copy of XOR.INF under its original name, and saves the original copy as XOR.INX, so you can restore it simply by changing the name if things somehow become totally bollixed.

While the operation of XOR\_MEM.PRG is very straightforward, there is unfortunately little that we can give you in the way of advice on the actual numbers to be entered in this program. The amount of memory that you will need for X-oR depends on how many Instruments you plan to use, and how many Banks you want to open at once, as well as the sizes of their Profiles and Bank files. The amount of memory that you'll actually have available depends on the size of your computer, the presence of any desk accessories, the size of your sequences, and several other factors. You will have to find a balance between all of these factors when allocating memory to X-oR.

The best way to determine the amount of memory you need is by trial and error. Since XOR\_MEM.PRG will run in the MPE, it's easy to do this, although you'll need to reload X-oR each time you change the size. Start with 200K as a default (or 400K in a 2 Megabyte ST—this should do for all but the largest of setups). Load X-oR into the MPE. If you get an "insufficient memory" message, or X-oR won't load, you'll need to increase the memory allocation. Otherwise, check the Info menu in X-oR to see how much memory is left for Bank and Library files. Try opening Bank files for all your Instruments—only by playing with X-oR will you be able to decide if there is enough memory for you.

A second consideration with MPE programs is the size contained in the MPE host's .INF file (KCS.INF), which tells the MPE host (KCS) how much space to reserve for MPE resource files. The default .INF file supplied with the MPE host program should reserve plenty of space for use with X-oR, but if you want to use X-oR with other programs (especially the Copyist), you may need to increase this number, or if X-oR is the only GEM program you are using, you might want to shrink it, to make better use of your computer's memory. See the MPE host program's manual for more information on the .INF file.

## **MPE Mouse Play Options**

The MPE supports three additional **Mouse Play Options**, in which the right mouse button can be used to play music within the sequencer. If you're searching for a choice voice to use with a certain sequence, these options will let you ponder each potential perfect patch as the particular piece plays.

The three additional MPE Mouse Play Options are chosen from the **Options** menu. When the **Mouse Play Option** is **Play Sequence**, a right mouse click will play the current track, song, or sequence, depending on what KCS mode you were last in. If **Play Range** is selected, then the right mouse button will play the range that is highlighted on the KCS Edit screen, if one exists--otherwise, it is identical to the **Play Sequence** option. Finally, if **Play Cue** is selected, the sequencer will play all tracks starting at the current cue point (in **TRACK** mode), or the current cue sequence (in **OPEN** mode), or from the song cue point (in **SONG** mode). If the cue point in any mode is set at the beginning of the song, then the **Play Cue** option will play the entire piece of music, which makes it the most useful Mouse Play option in most situations.

All of the keys that control sequence playback are available when playing a sequence with the mouse. Playback can be stopped by pressing <F1> or the left mouse button, or can be restarted by pressing the right mouse button or the <Space bar>. The <Esc> key will pause the sequencer, and the <,> and <.> keys will also change the tempo.

## **Using X-oR with Other Systems**

Since Dr. T's Introduction of the MPE, other publishers of Atari ST software have released (or at least announced) their own multiple program operating systems. Several of these attempt to allow all programs to run, while others allow only well-behaved GEM programs to run. In either case, X-oR qualifies. Some of these systems even allow you to record X-oR output into a sequencer as the sequence is running. As of this writing, we have had success running X-oR in C-lab, Steinberg, and Intelligent Music systems, as well as the forthcoming "MIDITasking" system from Atari, which we at Dr. T's and Caged Artist hope will become the standard for the ST. Check the README.DOC file on the X-oR program disk for the latest information, or contact our user support personnel for more details.

## **Appendix 1**

### **Service and Support**

This program and the associated documentation are copyright 1989 and 1990 by Robert Melvin. This program is licensed to be used on a single machine. It may not be copied without explicit written permission. If the program is transferred to another party, all backup copies must be transferred at the same time, or destroyed. This notice of copyright must be transferred if you transfer the program, and your license to use the program is terminated on transfer.

The diskette on which the program is furnished is warranted for ninety (90) days from the date of delivery. The program is not guaranteed to meet your requirements, and operation of the program is not guaranteed to be uninterrupted or error free. In no event will Robert Melvin or Dr. T's Music Software be liable for any damages, including any lost savings, lost profits, or other incidental or consequential damages arising out of the use or inability to use this program, even if we have been advised of the possibility of damages. Dr. T's Music Software and Robert Melvin shall not be responsible for any damages claimed by any other party, resulting from the use or attempted use of this program. All warranties implied are with Dr. T's, not your local dealer. If problems arise, call Dr. T's directly.

## Copy Protection and Backups

The disk containing X-oR is copy protected, and must be inserted in drive A when running the program from either the hard or floppy disk. We regret the necessity for copy protection, but experience has shown this to be the only way to deal with unauthorized distribution of our programs. Software "piracy" is a crime and deprives your fellow artists of their rightful income. Because of this problem, we are much more fun to deal with if we have your completed warranty card in our hands when you call for technical support.

A single backup disk will be sent to you, at no charge, when you send in your warranty registration card. You must include either your completed warranty card or your diskette serial number and a copy of the sales receipt with your request for a backup. There is a \$15 charge for the replacement of program disks that become defective more than 90 days after the date of purchase. We will only send one backup disk to each customer, and you will be required to return either your backup or original disk when ordering updates or replacement disks.

When returning disks for replacement or updates, please send the disk by UPS, Federal Express, Express Mail, or some other service that will allow you to trace the shipment. We're sorry, but we cannot be held responsible for packages sent via regular US mail.

Dr. T's reserves the right to make improvements to the program without notice, and to make what we consider to be reasonable charges for updates.

## What To Do If Problems Arise

If you have problems with X-oR that you are unable to solve with the help of the manual, Dr. T's maintains a customer service line staffed by experienced MIDI musicians. We are happy to help you with questions regarding X-oR and any of our other programs, but due to the incredible variety of MIDI products available today, we cannot answer questions regarding other manufacturer's hardware or software, including questions on the basic operation of GEM, the Atari ST, or any other computers or musical instruments.

When calling Dr. T's for customer service, there are a number of things that you can do to help us help you, which can also save you money on your long distance bill. Here is a check list of things to have ready when calling Dr. T's:

- 1--Your diskette registration number
- 2--Your manual
- 3--Computer turned on and X-oR booted
- 4--Any data related to the problem
- 5--Information on your computer's disk configuration, monitor type, printer type, etc.
- 6--Paper and pencil

When you call us, we will walk you through the program and ask you questions about what happens, so it is very important that you have this material at hand when calling. If you don't have this ready, we will ask you to call back later with the required information. After you've completed the checklist, call us at ~~(617) 244-1542~~ between 10 AM and 4 PM Eastern Standard Time, Monday through Friday.

→ (617) 455-1458

## **X-oR Support on Dr. T's BBS**

The Dr. T User's Group on the Berklee Mac User's BBS has an entire X-oR file section. You can download the latest Profiles, fixes, and updates as they occur. You can "talk" with other X-oR users, and, if you have a X-oR related problem or question, Dr. T's product support specialists and X-oR's author, Bob Melvin, are routinely on-line to provide answers to the toughest of questions. The Berklee Mac User's BBS phone number is (617) 739-2366.

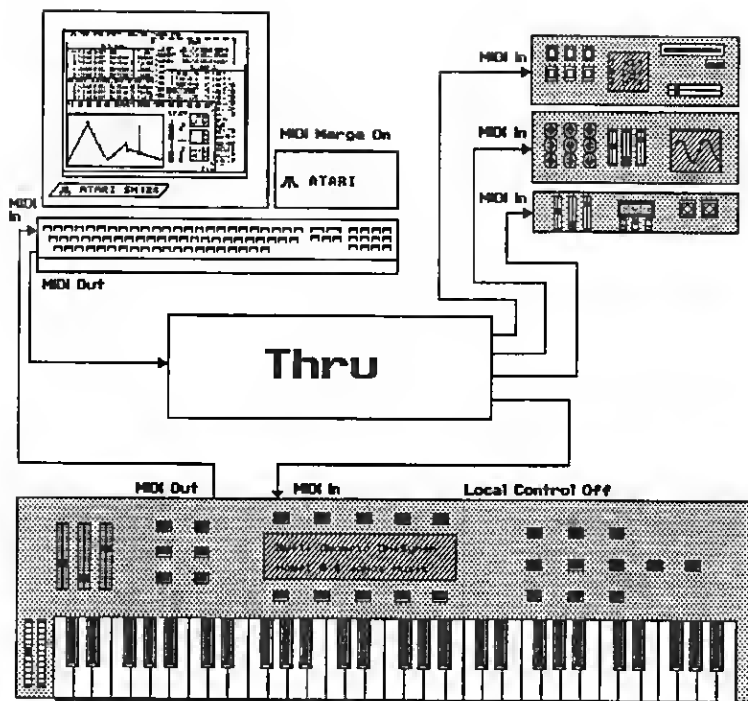


## Appendix 2

### MIDI Switcher Programming

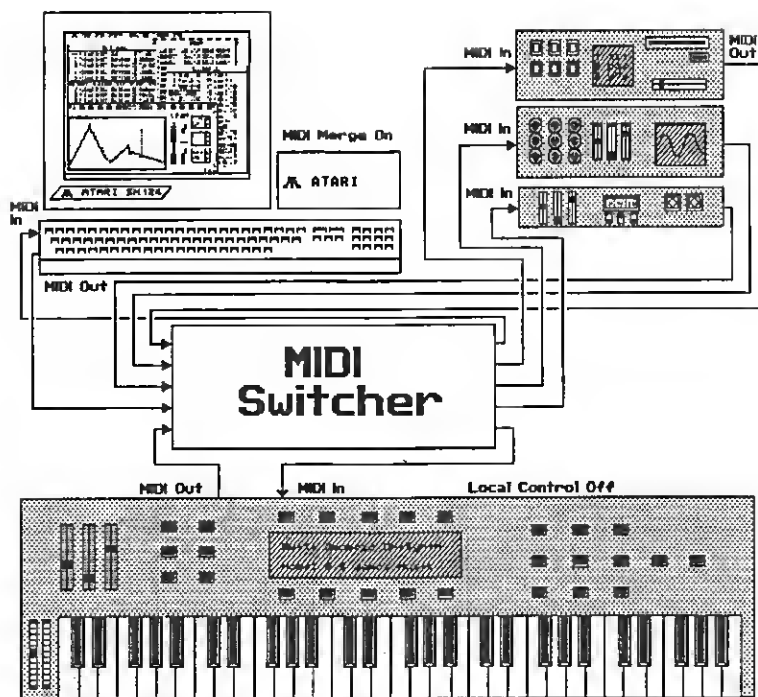
In the standard "working" setup configuration, shown in the diagram on page 106, the master controller is connected to the ST's input, whose output is connected to the inputs of all MIDI Instruments in the system, via a switcher or thru box, or the thru ports on individual Instruments. When MIDI merging (echo) is turned on in X-oR, this configuration allows your entire system to be controlled from the master keyboard. If you have a MIDI switcher, this is the "default switcher program", the program X-oR selects any time it is not getting system exclusive data from an Instrument.

The second diagram shows how you would typically wire a system with a programmable switcher. Whenever X-oR needs to establish exclusive, bi-directional communication with an Instrument, it sends a program change message to the switcher. We've already discussed these programs in Chapter 2, but there are a few points that are worth clarifying. First, in each program except the default switcher program, the output of the ST should be connected only to the input of the instrument in question. This is absolutely essential in a "switch to send" situation (i.e. if you have two instruments of the same type which don't have a unique unit number or system exclusive channel), since they will both receive dumps intended for either if they are both connected to the ST simultaneously. It is also a good practice even if you don't have any identical instruments, since many Instruments choke on system exclusive messages that are intended for other machines, even though the MIDI spec says they shouldn't.



Default Switcher Program

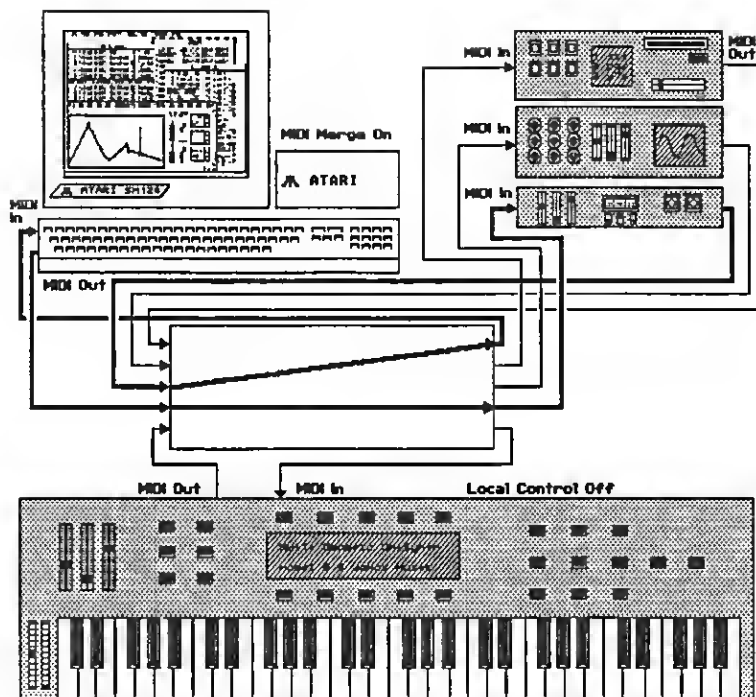
Likewise, each program should connect only the instrument in question to the ST's MIDI input, as shown in the diagram on page 108. (If your switcher doesn't have MIDI merging, this condition is always satisfied.) If not, any time you play a key on your keyboard during an editing session, or touch a knob on some other instrument, you run the risk of corrupting the data being sent to the ST.



MIDI Switcher Connections

Finally, make sure that any special data processing features, such as merging, transposition, or filtering are turned off in each of these programs. Merging is especially dangerous, since it can result in MIDI feedback loops that can be a nightmare to debug. Data filtering could prevent some messages from getting to your instruments in certain rare instances.

If you have instruments working in overflow mode (such as a Matrix 6 and a Matrix 1000, or an ESQ-1 and an ESQ-M), they should be connected through the switcher, so that the overflow connection is programmable. X-oR may even require this type of connection to work properly, as discussed on page 92.



Switcher Program for Rack Module #3

## Not Enough Inputs, You Say?

If your MIDI switcher doesn't have enough inputs for your system, you can extend its capabilities with a manual switch box. The manual switcher should be connected between your master controller and the programmable switcher. The input that connects the master controller and the "smart" switcher should be selected most of the time, and the other inputs of the "dumb" switcher should be connected to the instruments that you are least likely to get Patches from.

A better solution if you run out of inputs is to obtain another programmable switcher. Switchers can be cascaded, although not as efficiently as you might hope for. We recommend that you connect the second switcher as if it were an instrument, using an input and output on each switcher to connect the two together. This arrangement allows you to connect any two instruments in your system together. However, each new 8 by 8 switcher only nets you 6 more inputs. One potential problem to watch out for: Does your switcher pass the program change which switches it? In this case, one hopes that the answer is yes, because the same program change must be able to switch the second switcher.

### **Suggested MIDI Switchers**

Several manufacturers make programmable MIDI switchers, all aimed at systems of varying sizes. For most systems, a simple 8 by 8 switcher, such as those made by 360 Systems, JL Cooper, and Digital Music Services, is probably adequate. If you have a larger than average system, or if you're looking toward expansion, KMX makes a particularly fine 15 by 16 switcher, and JL Cooper also has a 16 by 20 unit (quite expensive). There are too many options to mention them all, but basically all the switchers we have encountered have worked. As far as features go, MIDI merging often comes in handy, but the other bells and whistles are optional.

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## Appendix 3

### Creating and Editing Profiles

For those hardy souls who wish to take the creation of new Profiles onto themselves, we offer a separate Profile development system, known as E-oR. This program gives you complete control over all aspects of the Profile, including the specifics of system exclusive communication, data packing and Interpretation, and the placement of controls on the screen.

One point that we cannot overemphasize is that the Profile editor is *not* intended for the casual user. The various manufacturers of MIDI equipment all use an incredible variety of techniques for communicating with their instruments, which range from the straightforward to the incomprehensible. (Actually, we could tell you some hilarious stories about certain instruments, but we don't want to step on anyone's toes.) Suffice it to say that, without a good understanding of the nuts and bolts of MIDI transmission and some experience with computer programming, the most you'll be able to do with the Profile editor is change the appearance of things on the screen, or set up new "sections", in existing Profiles.

Before you dive into E-oR-land, here's a few words of caution:

- 1) **At this writing, E-oR is by no means a finished product!** In its current state, it won't be useful to every X-oR user.
- 2) Our product support specialists are **NOT** equipped to answer **ANY** E-oR questions!!! **THE ONLY HELP AVAILABLE IS "ON-LINE"** via Dr. T's affiliated BBS (see Appendix 1).
- 3) **ALWAYS** back up Profiles before you attempt any modifications with E-oR. **ALWAYS!**

4) We strongly recommend that only people with experience in some form of computer programming (and with complete Sys-Ex documentation for their Instrument), attempt to mess with XORCL, X-oR's Control Language.

5) The manual for E-oR is contained on disk only (EORMAN.TXT), so you'll need to print it out. Read all of it! Profiles, like the Instruments they serve, can be very complex.

Now that we've totally scared you off, we must say that not everything in E-oR is difficult: some Profile screens are simple, like choosing sections for the Transplant commands. The parameter object page is easy to understand, and reorganizing the layout of an edit screen is a useful and not too difficult task which requires no Sys-Ex documentation (as long as you're not adding or deleting objects).



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